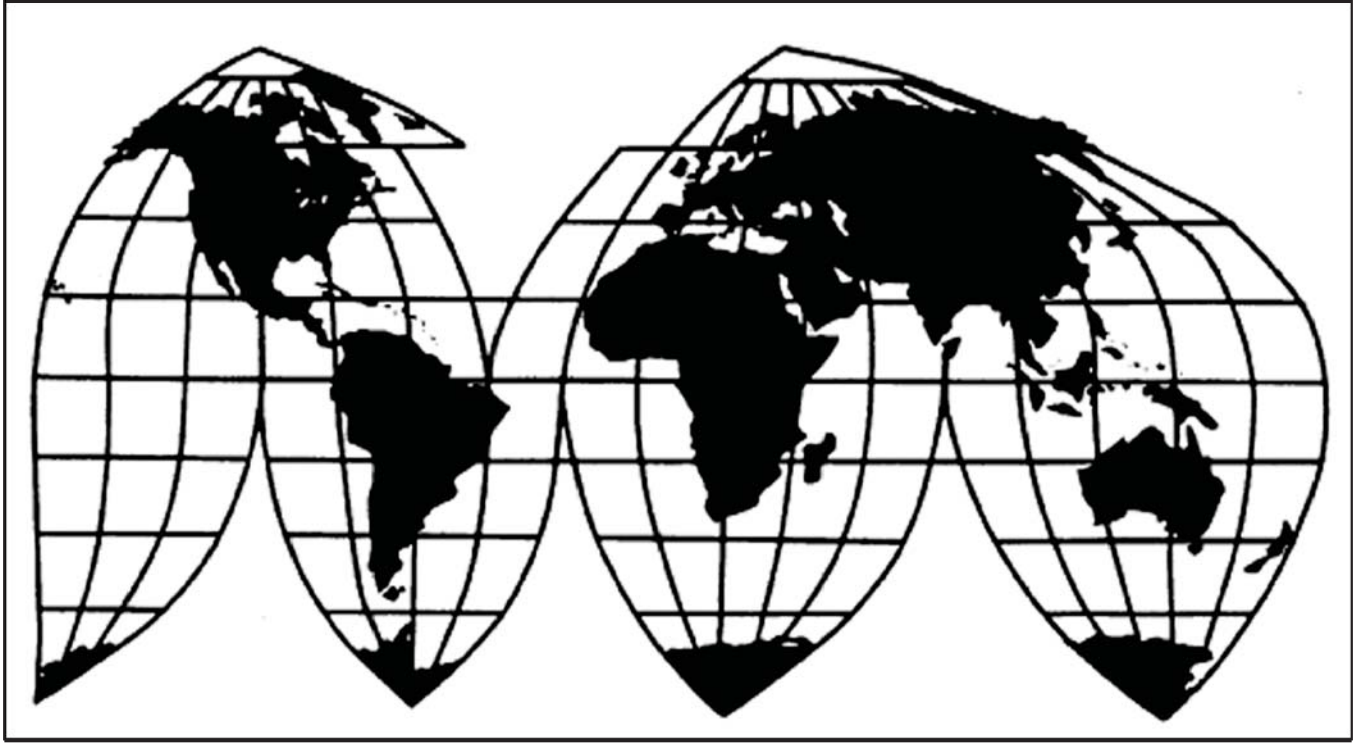
Ammonium Sulfate from China

Investigation Nos. 701-TA-562 and 731-TA-1329 (Final)

Publication 4671 **March 2017**

U.S. International Trade Commission



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UNITED STATES INTERNATIONAL TRADE COMMISSION

Investigation Nos. 701-TA-562 and 731-TA-1329 (Final)

Ammonium Sulfate from China

DETERMINATIONS

On the basis of the record[1] developed in the subject investigations, the United States International Trade Commission ("Commission") determines, pursuant to the Tariff Act of 1930 ("the Act"), that an industry in the United States is materially injured by reason of imports of ammonium sulfate from China, provided for in subheading 3102.21.00 of the Harmonized Tariff Schedule of the United States, that have been found by the Department of Commerce ("Commerce") to be sold in the United States at less than fair value ("LTFV"), and to be subsidized by the government of China.[2]

BACKGROUND

The Commission, pursuant to sections 705(b) and 735(b) of the Act (19 U.S.C. 1671d(b) and 19 U.S.C. 1673d(b)), instituted these investigations effective May 25, 2016, following receipt of a petition filed with the Commission and Commerce by PCI Nitrogen, LLC, Pasadena, Texas. The final phase of the investigations was scheduled by the Commission following notification of preliminary determinations by Commerce that imports of ammonium sulfate from China were subsidized within the meaning of section 703(b) of the Act (19 U.S.C. 1671b(b)) and sold at LTFV within the meaning of 733(b) of the Act (19 U.S.C. 1673b(b)). Notice of the scheduling of the final phase of the Commission's investigations and of a public hearing to be held in connection therewith was given by posting copies of the notice in the Office of the Secretary, U.S. International Trade Commission, Washington, DC, and by publishing the notice in the *Federal Register* on November 8, 2016 (81 FR 78631). The hearing was held in Washington, DC, on January 12, 2017, and all persons who requested the opportunity were permitted to appear in person or by counsel.

[1] The record is defined in sec. 207.2(f) of the Commission's Rules of Practice and Procedure (19 CFR 207.2(f)).

[2] Commissioner Dean A. Pinkert did not participate in these investigations.

Views of the Commission

Based on the record in the final phase of these investigations, we determine that an industry in the United States is materially injured by reason of imports of ammonium sulfate from China found by the U.S. Department of Commerce ("Commerce") to be sold in the United States at less than fair value and subsidized by the government of China.[1]

I. Background

The petitioner is PCI Nitrogen, LLC ("PCI"), a domestic producer of ammonium sulfate.[2] Representatives of PCI appeared at the hearing accompanied by counsel and submitted prehearing and posthearing briefs. Representatives of AdvanSix, Inc., a domestic producer of ammonium sulfate, and the United Steelworkers also appeared at the hearing in support of imposition of antidumping and countervailing duty orders. No respondent parties appeared at the hearing or submitted prehearing or posthearing briefs.

Data Coverage. U.S. industry data are based on the questionnaire responses from 11 domestic producers of ammonium sulfate that are believed to have accounted for the vast majority of domestic production of ammonium sulfate in 2015.[3] U.S. import data are based on official Commerce import statistics. Usable questionnaire responses were received from nine U.S. importers, representing 94.4 percent of subject imports from China in 2015.[4] One producer of subject merchandise responded to the Commission's questionnaire; it reported that it *** during the period of investigation ("POI") of January 2013 through September 2016, and estimated that its production of subject merchandise accounted for *** percent of overall production of ammonium sulfate in China in 2015.[5]

II. Domestic Like Product

A. In General

In determining whether an industry in the United States is materially injured or threatened with material injury by reason of imports of subject merchandise, the Commission first defines the "domestic like product" and the "industry."[6] Section 771(4)(A) of the Tariff Act of 1930, as amended ("the Tariff Act"), defines the relevant domestic industry as the "producers as a whole of a domestic like product, or those producers whose collective output of a domestic like product constitutes a major proportion of the total domestic production of the product."[7] In turn, the Tariff Act defines "domestic like product" as "a product which is like,

[1] Commissioner Pinkert did not participate in these investigations.
[2] Confidential Report ("CR") at I-1; Public Report ("PR") at I-1.
[3] CR at I-5, III-1; PR at I-4, III-1.
[4] CR at I-5 to I-6, IV-1; PR at I-4, IV-1.
[5] CR at VII-3; PR at VII-3.
[6] 19 U.S.C. § 1677(4)(A).
[7] 19 U.S.C. § 1677(4)(A).

or in the absence of like, most similar in characteristics and uses with, the article subject to an investigation."[8]

The decision regarding the appropriate domestic like product in an investigation is a factual determination, and the Commission has applied the statutory standard of "like" or "most similar in characteristics and uses" on a case-by-case basis.[9] No single factor is dispositive, and the Commission may consider other factors it deems relevant based on the facts of a particular investigation.[10] The Commission looks for clear dividing lines among possible like products and disregards minor variations.[11] Although the Commission must accept Commerce's determination as to the scope of the imported merchandise that is subsidized or sold at less than fair value,[12] the Commission determines what domestic product is like the imported articles Commerce has identified.[13]

B. Product Description

Commerce defined the scope of the imported merchandise under investigation as follows:

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[8] 19 U.S.C. § 1677(10).

[9] *See*, *e.g.*, *Cleo Inc. v. United States*, 501 F.3d 1291, 1299 (Fed. Cir. 2007); *NEC Corp. v. Department of Commerce*, 36 F. Supp. 2d 380, 383 (Ct. Int'l Trade 1998); *Nippon Steel Corp. v. United States*, 19 CIT 450, 455 (1995); *Torrington Co. v. United States*, 747 F. Supp. 744, 749 n.3 (Ct. Int'l Trade 1990), *aff'd*, 938 F.2d 1278 (Fed. Cir. 1991) ("every like product determination 'must be made on the particular record at issue' and the 'unique facts of each case'"). The Commission generally considers a number of factors, including the following: (1) physical characteristics and uses; (2) interchangeability; (3) channels of distribution; (4) customer and producer perceptions of the products; (5) common manufacturing facilities, production processes, and production employees; and, where appropriate, (6) price. *See Nippon*, 19 CIT at 455 n.4; *Timken Co. v. United States*, 913 F. Supp. 580, 584 (Ct. Int'l Trade 1996).

[10] *See*, *e.g.*, S. Rep. No. 96-249 at 90-91 (1979).

[11] *Nippon*, 19 CIT at 455; *Torrington*, 747 F. Supp. at 748-49; *see also* S. Rep. No. 96-249 at 90-91 (Congress has indicated that the like product standard should not be interpreted in "such a narrow fashion as to permit minor differences in physical characteristics or uses to lead to the conclusion that the product and article are not 'like' each other, nor should the definition of 'like product' be interpreted in such a fashion as to prevent consideration of an industry adversely affected by the imports under consideration.").

[12] *See*, *e.g., USEC, Inc. v. United States*, 34 Fed. Appx. 725, 730 (Fed. Cir. 2002) ("The ITC may not modify the class or kind of imported merchandise examined by Commerce."); *Algoma Steel Corp. v. United States*, 688 F. Supp. 639, 644 (Ct. Int'l Trade 1988), *aff'd*, 865 F.3d 240 (Fed. Cir.), *cert. denied*, 492 U.S. 919 (1989).

[13] *Hosiden Corp. v. Advanced Display Mfrs.*, 85 F.3d 1561, 1568 (Fed. Cir. 1996) (the Commission may find a single like product corresponding to several different classes or kinds defined by Commerce); *Cleo*, 501 F.3d at 1298 n.1 ("Commerce's {scope} finding does not control the Commission's {like product} determination."); *Torrington*, 747 F. Supp. at 748-52 (affirming the Commission's determination defining six like products in investigations in which Commerce found five classes or kinds).

The merchandise covered by this investigation is ammonium sulfate in all physical forms, with or without additives such as anti-caking agents. Ammonium sulfate, which may also be spelled as ammonium sulphate, has the chemical formula $(NH_4)_2SO_4$.

The scope includes ammonium sulfate that is combined with other products, including by, for example, blending (*i.e.,* mixing granules of ammonium sulfate with granules of one or more other products), compounding (*i.e.,* when ammonium sulfate is compacted with one or more other products under high pressure), or granulating (incorporating multiple products into granules through, *e.g.,* a slurry process). For such combined products, only the ammonium sulfate component is covered by the scope of this investigation.

Ammonium sulfate that has been combined with other products is included within the scope regardless of whether the combining occurs in countries other than China.

Ammonium sulfate that is otherwise subject to this investigation is not excluded when commingled (*i.e.,* mixed or combined) with ammonium sulfate from sources not subject to this investigation. Only the subject component of such commingled products is covered by the scope of this investigation.

The Chemical Abstracts Service (CAS) registry number for ammonium sulfate is 7783–20–2.

The merchandise covered by this investigation is currently classifiable under Harmonized Tariff Schedule of the United States (HTSUS) subheading 3102.21.0000. Although this HTSUS subheading and CAS registry number are provided for convenience and customs purposes, the written description of the scope of the investigation is dispositive.[14]

Ammonium sulfate is a solid, crystalline salt, primarily used as a fertilizer. Like other fertilizers, ammonium sulfate is a source of nitrogen for soil, but unlike other nitrogenous fertilizers, it is also a source of sulfur, used by plants to make amino acids and chlorophyll. Ammonium sulfate is sold in a variety of grades, including granular and standard grades. Granular grade accounts for the vast majority of the U.S. market. Its relatively large particle size (typically 2.5 millimeters) makes it well suited for mixing with other fertilizers and application by spreading machines. Standard grade has a smaller particle size (less than 2 millimeters) and is well suited to applications that do not require mechanical spreading, including in orchards or lower technology farms.[15]

[14] *Ammonium Sulfate from the People's Republic of China: Final Affirmative Determination of Sales at Less Than Fair Value*, 82 Fed. Reg. 8403, 8404 (Jan. 25, 2017*); Ammonium Sulfate from the People's Republic of China: Final Affirmative Countervailing Duty Determination*, 82 Fed. Reg. 4850, 4851-4852 (Jan. 17, 2017).

[15] CR at I-10 to I-11; PR at I-8 to I-9.

C. Arguments of the Parties

Petitioner argues that there is a clear dividing line separating ammonium sulfate from other types of fertilizers, and that the Commission should accordingly define a single domestic like product conforming to the scope definition, as it did in the preliminary determinations.[16]

D. Analysis

In the preliminary determinations, the Commission defined a single domestic like product consisting of all ammonium sulfate. It found that all forms of ammonium sulfate have the same chemical composition and share the same general uses, typically as a fertilizer. It stated that the principal methods for producing ammonium sulfate all involved reacting sulfuric acid and ammonia, and that all methods result in an end product that typically consists of 21 percent nitrogen and 24 percent sulfur. The Commission observed that the largest domestic producer of ammonium sulfate produced both granular and standard grade ammonium sulfate at the same facility using the same equipment and same workers. The Commission found that domestically produced ammonium sulfate is sold through similar channels of distribution, with domestic producers selling to distributors and/or retailers. The Commission also found that granular grade ammonium sulfate typically commands a price premium over other grades of ammonium sulfate, but noted petitioner's assertions that there was some degree of interchangeability between granular and standard grades of ammonium sulfate, and that customers and producers perceive all forms of ammonium sulfate to be the same product. In light of the above, and in the absence of any argument to the contrary, the Commission defined a single domestic like product consisting of all ammonium sulfate.[17]

The record in these final phase investigations does not contain any new information concerning the characteristics and uses of ammonium sulfate,[18] and there is no argument that the Commission should adopt a definition of the domestic like product that is different from that in the preliminary determinations. Therefore, for the same reasons set forth in the preliminary determinations, we define a single domestic like product consisting of ammonium sulfate, coextensive with the scope of the investigations.

III. Domestic Industry

The domestic industry is defined as the domestic "producers as a whole of a domestic like product, or those producers whose collective output of a domestic like product constitutes a major proportion of the total domestic production of the product."[19] In defining the domestic industry, the Commission's general practice has been to include in the industry producers of all

[16] Transcript of Hearing ("Hearing Tr.") at 7 (Orava); Petitioner's Prehearing Brief at 7-12.

[17] *Ammonium Sulfate from China*, Inv. Nos. 701-TA-562 and 731-TA-1329 (Preliminary), USITC Pub. 4624 at 7-9 (July 2016).

[18] *See generally* CR at I-10 to I-14; PR at I-8 to I-11.

[19] 19 U.S.C. § 1677(4)(A).

domestic production of the like product, whether toll-produced, captively consumed, or sold in the domestic merchant market.

In the preliminary determinations, the Commission defined the domestic industry as all domestic producers of ammonium sulfate, and stated that there were no related parties issues.[20] No party has addressed the definition of the domestic industry in the final phase of these investigations. The record indicates that no domestic producer is a related party.[21]

Consequently, in light of our domestic like product definition, we define the domestic industry to include all domestic producers of ammonium sulfate.

IV. Material Injury by Reason of Subject Imports

Based on the record in the final phase of these investigations, we find that an industry in the United States is materially injured by reason of imports of ammonium sulfate from China that Commerce has found to be sold in the United States at less than fair value and subsidized by the government of China.[22]

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[20] *Ammonium Sulfate from China*, Inv. Nos. 701-TA-562 and 731-TA-1329 (Preliminary), USITC Pub. 4624 at 9 and n.43 (July 2016).

[21] The record of these final phase investigations indicates that no domestic producer is related to an exporter or importer of subject merchandise, or is itself an importer of subject merchandise. CR at III-2; PR at III-2. However, U.S. producer *** purchased *** short tons of subject imports from China in 2015 and *** short tons in January-September ("interim") 2016. CR at III-12; PR at III-8; ***. The Commission has previously concluded that a purchaser may be treated as a related party if it controls large volumes of subject imports. The Commission has found such control to exist when the domestic producer was responsible for a predominant proportion of an importer's purchases and these purchases were substantial. *See Iron Construction Castings from Brazil, Canada, and China*, Inv. No. 701-TA-249 and 731-TA-262-263, and 265 (Fourth Review), USITC Pub. 4655 at 11 (Dec. 2016).

*** identified four U.S. importers from which it purchased ammonium sulfate: ***, but did not specify the quantities it purchased from any of these importers individually. ***. Total subject imports from China were 369,570 short tons in 2015 and 152,503 short tons in interim 2016. CR/PR at Table IV-2. *** purchases of subject merchandise as a share of total U.S. subject imports from China were *** percent in 2015 and *** percent in interim 2016. *See* Table IV-2; ***.

The record does not contain sufficient information to permit a calculation of whether *** was responsible for a predominant proportion of subject imports from any of the importers from which it made purchases. In light of the data regarding the percentage of total U.S. subject imports from China accounted for by *** purchases of subject merchandise, we find that the record indicates that *** did not control a sufficiently large volume of subject imports to qualify as a related party.

[22] Pursuant to Section 771(24) of the Tariff Act, imports from a subject country of merchandise corresponding to a domestic like product that account for less than 3 percent of all such merchandise imported into the United States during the most recent 12 months for which data are available preceding the filing of the petition shall be deemed negligible. 19 U.S.C. §§ 1671b(a), 1673b(a), 1677(24)(A)(i), 1677(24)(B); *see also* 15 C.F.R. § 2013.1 (developing countries for purposes of 19 U.S.C. § 1677(36)). The statute further provides that subject imports from a single country which comprise less than 3 percent of total such imports of the product may not be considered negligible if there are several countries subject to investigation with negligible imports and the sum of such imports from all those (Continued...)

A. Legal Standards

In the final phase of antidumping and countervailing duty investigations, the Commission determines whether an industry in the United States is materially injured or threatened with material injury by reason of the imports under investigation.[23] In making this determination, the Commission must consider the volume of subject imports, their effect on prices for the domestic like product, and their impact on domestic producers of the domestic like product, but only in the context of U.S. production operations.[24] The statute defines "material injury" as "harm which is not inconsequential, immaterial, or unimportant."[25] In assessing whether the domestic industry is materially injured by reason of subject imports, we consider all relevant economic factors that bear on the state of the industry in the United States.[26] No single factor is dispositive, and all relevant factors are considered "within the context of the business cycle and conditions of competition that are distinctive to the affected industry."[27]

Although the statute requires the Commission to determine whether the domestic industry is "materially injured or threatened with material injury by reason of" unfairly traded imports,[28] it does not define the phrase "by reason of," indicating that this aspect of the injury analysis is left to the Commission's reasonable exercise of its discretion.[29] In identifying a causal link, if any, between subject imports and material injury to the domestic industry, the Commission examines the facts of record that relate to the significance of the volume and price

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(…Continued)
countries collectively accounts for more than 7 percent of the volume of all such merchandise imported into the United States. 19 U.S.C. § 1677(24)(A)(ii). In the case of countervailing duty investigations involving developing countries (as designated by the United States Trade Representative), the statute indicates that the negligibility limits are 4 percent and 9 percent, rather than 3 percent and 7 percent. 19 U.S.C. § 1677(24)(B).

Subject imports from China accounted for 62.9 percent, by quantity, of total U.S. imports during May 2015-April 2016, the 12-month period prior to filing of the petition. CR at IV-9; PR at IV-6. Because subject imports from China are well above the statutory negligibility threshold, we find that subject imports from China are not negligible.

[23] 19 U.S.C. §§ 1671d(b), 1673d(b). The Trade Preferences Extension Act of 2015, Pub. L. 114-27, amended the provisions of the Tariff Act pertaining to Commission determinations of material injury and threat of material injury by reason of subject imports in certain respects. We have applied these amendments here.

[24] 19 U.S.C. § 1677(7)(B). The Commission "may consider such other economic factors as are relevant to the determination" but shall "identify each {such} factor ... and explain in full its relevance to the determination." 19 U.S.C. § 1677(7)(B).

[25] 19 U.S.C. § 1677(7)(A).

[26] 19 U.S.C. § 1677(7)(C)(iii).

[27] 19 U.S.C. § 1677(7)(C)(iii).

[28] 19 U.S.C. §§ 1671d(a), 1673d(a).

[29] *Angus Chemical Co. v. United States*, 140 F.3d 1478, 1484-85 (Fed. Cir. 1998) ("{T}he statute does not 'compel the commissioners' to employ {a particular methodology}."), *aff'g,* 944 F. Supp. 943, 951 (Ct. Int'l Trade 1996).

effects of the subject imports and any impact of those imports on the condition of the domestic industry. This evaluation under the "by reason of" standard must ensure that subject imports are more than a minimal or tangential cause of injury and that there is a sufficient causal, not merely a temporal, nexus between subject imports and material injury.[30]

In many investigations, there are other economic factors at work, some or all of which may also be having adverse effects on the domestic industry. Such economic factors might include nonsubject imports; changes in technology, demand, or consumer tastes; competition among domestic producers; or management decisions by domestic producers. The legislative history explains that the Commission must examine factors other than subject imports to ensure that it is not attributing injury from other factors to the subject imports, thereby inflating an otherwise tangential cause of injury into one that satisfies the statutory material injury threshold.[31] In performing its examination, however, the Commission need not isolate the injury caused by other factors from injury caused by unfairly traded imports.[32] Nor does the

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[30] The Federal Circuit, in addressing the causation standard of the statute, observed that "{a}s long as its effects are not merely incidental, tangential, or trivial, the foreign product sold at less than fair value meets the causation requirement." *Nippon Steel Corp. v. USITC*, 345 F.3d 1379, 1384 (Fed. Cir. 2003). This was further ratified in *Mittal Steel Point Lisas Ltd. v. United States*, 542 F.3d 867, 873 (Fed. Cir. 2008), where the Federal Circuit, quoting *Gerald Metals, Inc. v. United States*, 132 F.3d 716, 722 (Fed. Cir. 1997), stated that "this court requires evidence in the record 'to show that the harm occurred "by reason of" the LTFV imports, not by reason of a minimal or tangential contribution to material harm caused by LTFV goods.'" *See also Nippon Steel Corp. v. United States*, 458 F.3d 1345, 1357 (Fed. Cir. 2006); *Taiwan Semiconductor Industry Ass'n v. USITC*, 266 F.3d 1339, 1345 (Fed. Cir. 2001).

[31] SAA at 851-52 ("{T}he Commission must examine other factors to ensure that it is not attributing injury from other sources to the subject imports."); S. Rep. 96-249 at 75 (1979) (the Commission "will consider information which indicates that harm is caused by factors other than less-than-fair-value imports."); H.R. Rep. 96-317 at 47 (1979) ("in examining the overall injury being experienced by a domestic industry, the ITC will take into account evidence presented to it which demonstrates that the harm attributed by the petitioner to the subsidized or dumped imports is attributable to such other factors;" those factors include "the volume and prices of nonsubsidized imports or imports sold at fair value, contraction in demand or changes in patterns of consumption, trade restrictive practices of and competition between the foreign and domestic producers, developments in technology and the export performance and productivity of the domestic industry"); *accord Mittal Steel*, 542 F.3d at 877.

[32] SAA at 851-52 ("{T}he Commission need not isolate the injury caused by other factors from injury caused by unfair imports."); *Taiwan Semiconductor Industry Ass'n,* 266 F.3d at 1345 ("{T}he Commission need not isolate the injury caused by other factors from injury caused by unfair imports ... . Rather, the Commission must examine other factors to ensure that it is not attributing injury from other sources to the subject imports." (emphasis in original)); *Asociacion de Productores de Salmon y Trucha de Chile AG v. United States*, 180 F. Supp. 2d 1360, 1375 (Ct. Int'l Trade 2002) ("{t}he Commission is not required to isolate the effects of subject imports from other factors contributing to injury" or make "bright-line distinctions" between the effects of subject imports and other causes.); *see also Softwood Lumber from Canada*, Inv. Nos. 701-TA-414 and 731-TA-928 (Remand), USITC Pub. 3658 at 100-01 (Dec. 2003) (Commission recognized that "{i}f an alleged other factor is found not to have or threaten to have injurious effects to the domestic industry, *i.e.*, it is not an 'other causal factor,' then there is nothing to

(Continued...)

"by reason of" standard require that unfairly traded imports be the "principal" cause of injury or contemplate that injury from unfairly traded imports be weighed against other factors, such as nonsubject imports, which may be contributing to overall injury to an industry.[33] It is clear that the existence of injury caused by other factors does not compel a negative determination.[34]

Assessment of whether material injury to the domestic industry is "by reason of" subject imports "does not require the Commission to address the causation issue in any particular way" as long as "the injury to the domestic industry can reasonably be attributed to the subject imports" and the Commission "ensure{s} that it is not attributing injury from other sources to the subject imports."[35] [36] Indeed, the Federal Circuit has examined and affirmed various Commission methodologies and has disavowed "rigid adherence to a specific formula."[37]

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further examine regarding attribution to injury"), *citing Gerald Metals,* 132 F.3d at 722 (the statute "does not suggest that an importer of LTFV goods can escape countervailing duties by finding some tangential or minor cause unrelated to the LTFV goods that contributed to the harmful effects on domestic market prices.").

[33] S. Rep. 96-249 at 74-75; H.R. Rep. 96-317 at 47.

[34] *See Nippon Steel Corp*., 345 F.3d at 1381 ("an affirmative material-injury determination under the statute requires no more than a substantial-factor showing. That is, the 'dumping' need not be the sole or principal cause of injury.").

[35] *Mittal Steel*, 542 F.3d at 877-78; *see also id.* at 873 ("While the Commission may not enter an affirmative determination unless it finds that a domestic industry is materially injured 'by reason of' subject imports, the Commission is not required to follow a single methodology for making that determination ... {and has} broad discretion with respect to its choice of methodology.") *citing United States Steel Group v. United States*, 96 F.3d 1352, 1362 (Fed. Cir. 1996) and S. Rep. 96-249 at 75. In its decision in *Swiff-Train v. United States*, 792 F.3d 1355 (Fed. Cir. 2015), the Federal Circuit affirmed the Commission's causation analysis as comporting with the Court's guidance in *Mittal*.

[36] Commissioner Kieff does not join this paragraph or the following three paragraphs. He points out that the Federal Circuit, in *Bratsk*, 444 F.3d 1369, and *Mittal Steel*, held that the Commission is *required*, in certain circumstances when analyzing present material injury, to consider a particular issue with respect to the role of nonsubject imports, without reliance upon presumptions or rigid formulas. The Court has not prescribed a specific method of exposition for this consideration. *Mittal Steel* explains as follows:

> What *Bratsk* held is that "where commodity products are at issue and fairly traded, price competitive, non-subject imports are in the market," the Commission would not fulfill its obligation to consider an important aspect of the problem if it failed to consider whether non-subject or non-LTFV imports would have replaced LTFV subject imports during the period of investigation without a continuing benefit to the domestic industry. 444 F.3d at 1369. Under those circumstances, *Bratsk* requires the Commission to consider whether replacement of the LTFV subject imports might have occurred during the period of investigation, and it requires the Commission to provide an explanation of its conclusion with respect to that factor.

542 F.3d at 878.

[37] *Nucor Corp. v. United States*, 414 F.3d 1331, 1336, 1341 (Fed. Cir. 2005); *see also Mittal Steel*, 542 F.3d at 879 ("*Bratsk* did not read into the antidumping statute a Procrustean formula for determining whether a domestic injury was 'by reason' of subject imports.").

The Federal Circuit's decisions in *Gerald Metals, Bratsk*, and *Mittal Steel* all involved cases where the relevant "other factor" was the presence in the market of significant volumes of price-competitive nonsubject imports. The Commission interpreted the Federal Circuit's guidance in *Bratsk* as requiring it to apply a particular additional methodology following its finding of material injury in cases involving commodity products and a significant market presence of price-competitive nonsubject imports.[38] The additional "replacement/benefit" test looked at whether nonsubject imports might have replaced subject imports without any benefit to the U.S. industry. The Commission applied that specific additional test in subsequent cases, including the *Carbon and Certain Alloy Steel Wire Rod from Trinidad and Tobago* determination that underlies the *Mittal Steel* litigation.

Mittal Steel clarifies that the Commission's interpretation of *Bratsk* was too rigid and makes clear that the Federal Circuit does not require the Commission to apply an additional test nor any one specific methodology; instead, the court requires the Commission to have "evidence in the record" to "show that the harm occurred 'by reason of' the LTFV imports," and requires that the Commission not attribute injury from nonsubject imports or other factors to subject imports.[39] Accordingly, we do not consider ourselves required to apply the replacement/benefit test that was included in Commission opinions subsequent to *Bratsk*.

The progression of *Gerald Metals, Bratsk*, and *Mittal Steel* clarifies that, in cases involving commodity products where price-competitive nonsubject imports are a significant factor in the U.S. market, the Court will require the Commission to give full consideration, with adequate explanation, to non-attribution issues when it performs its causation analysis.[40]

The question of whether the material injury threshold for subject imports is satisfied notwithstanding any injury from other factors is factual, subject to review under the substantial evidence standard.[41] Congress has delegated this factual finding to the Commission because of the agency's institutional expertise in resolving injury issues.[42]

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[38] *Mittal Steel*, 542 F.3d at 875-79.

[39] *Mittal Steel*, 542 F.3d at 873 (quoting from *Gerald Metals*, 132 F.3d at 722), 875-79 & n.2 (recognizing the Commission's alternative interpretation of *Bratsk* as a reminder to conduct a non-attribution analysis).

[40] To that end, after the Federal Circuit issued its decision in *Bratsk*, the Commission began to present published information or send out information requests in the final phase of investigations to producers in nonsubject countries that accounted for substantial shares of U.S. imports of subject merchandise (if, in fact, there were large nonsubject import suppliers). In order to provide a more complete record for the Commission's causation analysis, these requests typically seek information on capacity, production, and shipments of the product under investigation in the major source countries that export to the United States. The Commission plans to continue utilizing published or requested information in the final phase of investigations in which there are substantial levels of nonsubject imports.

[41] We provide in our discussion below a full analysis of other factors alleged to have caused any material injury experienced by the domestic industry.

[42] *Mittal Steel*, 542 F.3d at 873; *Nippon Steel Corp*., 458 F.3d at 1350, *citing U.S. Steel Group*, 96 F.3d at 1357; S. Rep. 96-249 at 75 ("The determination of the ITC with respect to causation is ... complex and difficult, and is a matter for the judgment of the ITC.").

B. Conditions of Competition and the Business Cycle

The following conditions of competition inform our analysis of whether there is material injury by reason of subject imports.

1. Demand Considerations

Demand for ammonium sulfate is generally driven by demand from the agricultural industry for use in fertilizers, specifically for the replenishment of sulfur in soils.[43] Ammonium sulfate is subject to seasonal (*i.e.,* spring and fall) business cycles driven by fertilizing and crop cycles.[44] Most responding firms reported that U.S. demand for ammonium sulfate has increased since January 1, 2013.[45] Apparent U.S. consumption increased by *** percent from 2013 to 2015, increasing from *** short tons in 2013 to *** short tons in 2014 and 2015.[46]

2. Supply Considerations

The record indicates that three different methods of production account for approximately 90 percent of U.S. and global ammonium sulfate production: (1) production of ammonium sulfate as a co-product of production of caprolactam;[47] (2) production through direct synthesis, in which ammonium is neutralized with sulfuric acid; and (3) production using gas produced from the coking of coal.[48] As discussed above, the 11 U.S. producers that provided usable questionnaire responses are believed to have accounted for the vast majority of U.S. production of ammonium sulfate in 2015.[49] Various individual U.S. producers use the three principal production processes: AdvanSix and *** produce ammonium sulfate as a co-product of producing caprolactam; PCI produces it through direct synthesis, and *** produces it through coking.[50] Petitioner PCI purchased an ammonium sulfate plant at Pasadena, Texas in March 2016 from Rentech Nitrogen, after Rentech Nitrogen had made a number of capital investments in the plant during the POI.[51]

The domestic industry was the largest supplier to the U.S. market during the POI. Its market share declined from *** percent in 2013 to *** percent in 2014, and then to ***

[43] CR at II-1, II-10; PR at II-1, II-7.

[44] CR at II-11: PR at II-7.

[45] CR/PR at Table II-3.

[46] CR/PR at Tables IV-6, C-1. Apparent U.S. consumption was *** short tons in interim 2015 and *** short tons in interim 2016. *Id.*

[47] Caprolactam is an intermediate product in the manufacture of nylon. Hearing Tr. at 24 (Hamilton).

[48] CR at I-11 to I-13; PR at I-9 to I-10.

[49] CR at III-1; PR at III-1; CR/PR at Table III-1.

[50] CR at VI-1 to VI-2 and nn. 4-7; PR at VI-1 and nn. 4-7; Hearing Tr. at 18-22 (Mazzella, Sr.), 24 (Hamilton).

[51] CR/PR at Table III-3; Hearing Tr. at 17-22 (Mazzella, Sr.).

percent in 2015.[52] The market share of subject imports increased from *** percent in 2013 to *** percent in 2014, and then to *** percent in 2015.[53] Nonsubject imports were the second largest source of supply in 2013 and 2014, but the third largest in 2015. Their market share declined from *** percent in 2013 to *** percent in 2014, and then to *** percent in 2015.[54] Canada was by far the largest source of nonsubject imports during the POI.[55]

3. Substitutability and Other Conditions

As previously discussed, ammonium sulfate comes in a variety of grades, including granular and standard grades. Granular grade accounts for the vast majority of the U.S. market.[56] Ammonium sulfate comes in different granule sizes (*e.g.*, 0 mm to 2 mm, 2 mm to 4 mm, 4 mm and above), and most responding purchasers and importers reported that product within one of these size ranges is only "sometimes" or "never" interchangeable with product within another size range.[57] A majority of U.S. producers' U.S. shipments of ammonium sulfate during the POI were of the medium granule size (2 mm to 4 mm).[58] The vast majority of U.S. shipments of subject imports of ammonium sulfate during the POI were likewise of the medium granule size.[59]

A majority of responding market participants reported that the domestic like product and subject imports are frequently or always interchangeable.[60] In comparing the domestic like product and subject imports in 15 non-price purchasing factors, majorities or pluralities of purchasers found the domestic like product to be superior to subject imports with respect to ten factors (including those pertaining to product quality), and the products from the two sources to be comparable with respect to the remaining five factors.[61] Based on the record, we

[52] CR/PR at Table IV-6. The domestic industry's market share was *** percent in interim 2015 and *** percent in interim 2016. *Id.*

[53] CR/PR at Table IV-6. The market share of subject imports was *** percent in interim 2015 and *** percent in interim 2016. *Id.*

[54] CR/PR at Table IV-6. The market share of nonsubject imports was *** percent in interim 2015 and *** percent in interim 2016. *Id.*

[55] CR/PR at Table IV-2.

[56] CR at I-10 to I-11; PR at I-8 to I-9.

[57] CR/PR at Table II-4. The response of U.S. producers was mixed. *Id.*

[58] CR at III-11; PR at III-7. U.S. producers' U.S. shipments of granules in the 2 mm to 4 mm size range accounted for *** percent to *** percent of U.S. producers' U.S. shipments during the POI. CR/PR at Table III-6.

[59] Shipments of granules in the 2 mm to 4 mm range accounted for at least *** percent of U.S. shipments of subject imports during the POI. CR/PR at Table IV-4.

[60] CR/PR at Table II-10. All six responding U.S. producers reported that subject imports and the domestic like product were "always" or "frequently" interchangeable, while four of eight responding importers and 10 of 17 responding purchasers reported that subject imports and the domestic like product were "always" or "frequently" interchangeable. *Id.*

[61] CR/PR at Table II-9.

find that subject imports and the domestic like product are moderately to highly substitutable.[62]

We find that price is an important factor in purchasing decisions with respect to ammonium sulfate. Eighteen of 21 responding purchasers reported that price is a "very important" factor in purchasing decisions, while three purchasers reported that it is "somewhat important."[63] When asked to list the top three factors in their purchasing decisions, purchasers cited quality and price most often, and price was most frequently cited as the most important factor.[64]

The largest single component of the cost of goods sold ("COGS") for U.S. producers during the POI was raw material costs, which as a percentage of COGS ranged from a period high of 81.7 percent in 2013 to a period low of 77.0 percent in interim 2016.[65] The primary raw material inputs for ammonium sulfate production include ammonium and sulfur.[66] U.S. producers' average raw material costs declined during the POI.[67]

U.S. producers reported that ammonium sulfate operations are highly capital intensive with high fixed costs.[68] Because U.S. demand for ammonium sulfate is seasonal, U.S. ammonium sulfate prices can also exhibit seasonality, with prices tending to be highest in the spring when demand is highest.[69]

C. Volume of Subject Imports

Section 771(7)(C)(i) of the Tariff Act provides that the "Commission shall consider whether the volume of imports of the merchandise, or any increase in that volume, either in absolute terms or relative to production or consumption in the United States, is significant."[70]

Subject import volume increased dramatically during the POI. The volume of subject imports increased by 682.4 percent between 2013 and 2015, from 47,236 short tons in 2013 to 229,000 short tons in 2014, and then to 369,570 short tons in 2015.[71]

Subject imports as a share of apparent U.S. consumption increased from *** percent in 2013 to *** percent in 2014, and then to *** percent in 2015.[72] During a period of increasing

[62] CR at II-14; PR at II-9.

[63] CR/PR at Table II-7.

[64] CR/PR at Table II-6.

[65] CR/PR at Table VI-1.

[66] CR at I-11, V-1; VI-8; PR at I-9, V-1, VI-5.

[67] U.S. producers' average raw material costs declined by 9.5 percent between 2013 and 2015. They were $148 per short ton in 2013, $141 per short ton in 2014, and $134 per short ton in 2015. They were $141 per short ton in interim 2015 and $110 per short ton in interim 2016. CR/PR at Table VI-1; CR at VI-7; PR at VI-5.

[68] Hearing Tr. at 27-28, 70-71, 72 (Hamilton), 32, 68-69, 71-72 (Mazzella, Jr.).

[69] CR at V-11; PR at V-5; Hearing Tr. at 86 (Hamilton).

[70] 19 U.S.C. § 1677(7)(C)(i).

[71] CR/PR at Tables IV-2, C-1. The volume of subject imports was 303,464 short tons in interim 2015, and 152,503 short tons in interim 2016. *Id.*

demand, subject imports captured market share principally from the domestic industry, while also taking market share from nonsubject imports.[73] As subject import market share increased from 2013 to 2015, domestic industry market share declined from *** percent in 2013 to *** percent in 2014 and *** percent in 2015.[74] Thus, the domestic industry lost *** percentage points of market share overall from 2013 to 2015, while subject imports increased their share by *** percentage points.

The volume of subject imports was substantially lower following the filing of the petition on May 25, 2016,[75] as reflected in the monthly data for subject imports in 2016.[76] We find that the decline in the volume and market share of subject imports following the filing of the petition was a result of the pendency of these investigations. We therefore accord reduced weight to the reductions in subject import volume and market share for interim 2016, pursuant to 19 U.S.C. § 1677(7)(I).

We conclude that the volume of subject imports and the increase in that volume are significant both in absolute terms and relative to consumption in the United States.

D. Price Effects of the Subject Imports

Section 771(7)(C)(ii) of the Tariff Act provides that, in evaluating the price effects of the subject imports, the Commission shall consider whether

> (I) there has been significant price underselling by the imported merchandise as compared with the price of domestic like products of the United States, and
>
> (II) the effect of imports of such merchandise otherwise depresses prices to a significant degree or prevents price increases, which otherwise would have occurred, to a significant degree.[77]

As addressed in section IV.B.3 above, the record indicates that the domestic like product and subject imports are moderately to highly substitutable and that price is important in

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(…Continued)

[72] CR/PR at Tables IV-6, C-1. Subject imports as a share of apparent U.S. consumption were *** percent in interim 2015 and *** percent in interim 2016. *Id.*

[73] The market share of nonsubject imports declined from *** percent in 2013 to *** percent in 2014, and then to *** percent in 2015. It was *** percent in interim 2015 and *** percent in interim 2016. CR/PR at Table IV-6.

[74] CR/PR at Table IV-6. The domestic industry's market share was *** percent in interim 2015 and *** percent in interim 2016. *Id.*

[75] CR at I-1; PR at I-1.

[76] CR/PR at Table IV-3. We note that import data were not available for the months of October, November, and December 2016 when the monthly data in Table IV-3 were collected, so the entries in that table for those months (which are outside the POI) should have been indicated as "not available" rather than "zero."

[77] 19 U.S.C. § 1677(7)(C)(ii).

purchasing decisions. As discussed above in section IV.B.1 in our consideration of conditions of competition, the record indicates that the market for ammonium sulfate has seasonal pricing cycles.

Five domestic producers and seven importers of subject merchandise from China provided usable quarterly data on the total quantity of and f.o.b. value of their U.S. shipments of two ammonium sulfate products to unrelated customers during the POI, although not all firms reported pricing for all products for all quarters.[78] Reported pricing data accounted for approximately *** percent of U.S. producers' U.S. shipments of ammonium sulfate and *** percent of U.S. shipments of subject imports from China in 2015.[79]

Subject imports undersold the domestic like product in 14 out of 26 overall comparisons, at margins ranging between 1.6 percent and 19.9 percent, and an overall average margin of underselling of 9.4 percent.[80] Despite the mixed result in the number of underselling and overselling quarterly comparisons, by volume there was predominant underselling, with 469,093 short tons of subject imports associated with instances of underselling, as compared to 82,420 short tons of subject imports associated with instances of overselling. Thus, 85.1 percent of the volume of subject imports covered by the Commission's pricing data were sold during quarters in which the average price of these imports was less than that of the comparable domestic product. Moreover, there was pervasive underselling (in *** of *** comparisons) by subject imports of Product 1, involving sales to distributors, which is where most of the competition between the domestic like product and subject imports took place.[81] Furthermore, 11 purchasers reported that they had purchased ammonium sulfate imported from China instead of domestically produced product and that subject import prices were lower than those for domestically produced product, and four of these purchasers reported that price was a primary reason for the decision to purchase subject imports rather than domestically

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[78] CR at V-5; PR at V-3. The two pricing products are:

Product 1 – Ammonium sulfate in granular form (particles with a diameter of 2.0 millimeters or greater) and sold in bulk, sold to distributors.

Product 2 -- Ammonium sulfate in granular form (particles with a diameter of 2.0 millimeters or greater) and sold in bulk, sold to retailers.
CR at V-5; PR at V-3.

[79] CR at V-5 to V-6; PR at V-3.

[80] CR/PR at Table V-6. Although as discussed above we have reduced the weight we are according to the reductions in subject import volume and market share during interim 2016, we are considering the pricing data for the entire POI, including interim 2016. We note that U.S. importers maintained substantial inventories of subject imports at the end of 2015, which were reduced at the end of interim 2016. Thus, even though the volume of subject imports dropped substantially after filing of the petition in May 2016, the drawdown of inventories of subject imports may have continued to affect prices in the U.S. market after the filing of the petition. U.S. importers' end-of-period inventories of subject imports were *** short tons in 2013, *** short tons in 2014, and *** short tons in 2015. They were *** short tons in interim 2015 and *** short tons in interim 2016. CR/PR at Table VII-6.

[81] CR/PR at Table V-6. The volume of subject imports of product 1 accounted for *** percent of the total volume of subject imports included in the Commission's pricing data. *Id.*

produced product.[82] Indeed, as previously discussed in section IV.C, from 2013 to 2015 the subject imports gained market share at the expense of the domestic industry.

Given the moderate-to-high degree of substitutability between subject imports and the domestic like product and the importance of price in purchasing decisions, we find the underselling by subject imports to be significant.

The record indicates that the increasing volume and market share of low-priced subject imports led to declining prices for the domestic like product during the period of investigation. As noted previously, demand for ammonium sulfate is seasonal, and this seasonality is reflected in the quarterly pricing data for product 1. While we note that there was a mixed record of underselling and overselling during the higher demand seasonal quarters, domestic prices nonetheless declined on an annual basis throughout the POI. During the period January 2013 through December 2015, U.S. producers' prices for product 1 declined by 31.5 percent, and U.S. producers' prices for product 2 declined by *** percent,[83] at a time when U.S. demand was increasing.[84] Moreover, while U.S. producers' raw material costs were also declining during this period, their prices declined by a greater degree than their raw material costs.[85] Seven responding purchasers reported that U.S. producers had reduced prices in order to compete with low-priced subject imports, with estimated price reductions ranging from 3 to 46 percent.[86] Consequently, we find that the subject imports depressed prices of the domestic like product to a significant degree.

In sum, the subject imports significantly undersold the domestic like product during the POI. Low-priced subject imports took market share away from the domestic industry and had significant price-depressing effects on the domestic like product from 2013 to 2015. We therefore find that the subject imports had significant price effects.

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[82] CR at V-13; PR at V-7; CR/PR at Table V-8.

[83] *See* CR/PR at Tables V-3, V-4.

[84] While prices for both pricing products fluctuated during interim 2016, when apparent consumption was no longer rising, prices for both products were lower in the third quarter of 2016 than they were during either the third or fourth quarters of 2015. CR/PR at Tables V-3 to V-4. Apparent U.S. consumption increased by *** percent from 2013 to 2015, increasing from *** short tons in 2013 to *** short tons in 2014 and 2015. It was *** short tons in interim 2015 and *** short tons in interim 2016. CR/PR at Tables IV-6, C-1.

[85] U.S. producers' total raw material costs declined by 11.4 percent between 2013 and 2015. They increased from $472.1 million in 2013 to $495.8 million in 2014, and then declined to $418.3 million in 2015. They were $335.3 million in interim 2015 and $254.4 million in interim 2016. CR/PR at Table VI-1. U.S. producers' average raw material costs declined by 9.5 percent between 2013 and 2015. They were $148 per short ton in 2013, $141 per short ton in 2014, and $134 per short ton in 2015. They were $141 per short ton in interim 2015 and $110 per short ton in interim 2016. *Id.*

[86] CR at V-13; PR at V-7; CR/PR at Table V-9.

E. Impact of the Subject Imports[87]

Section 771(7)(C)(iii) of the Tariff Act provides that examining the impact of subject imports, the Commission "shall evaluate all relevant economic factors which have a bearing on the state of the industry."[88] These factors include output, sales, inventories, capacity utilization, market share, employment, wages, productivity, gross profits, net profits, operating profits, cash flow, return on investment, return on capital, ability to raise capital, ability to service debts, research and development, and factors affecting domestic prices. No single factor is dispositive and all relevant factors are considered "within the context of the business cycle and conditions of competition that are distinctive to the affected industry."[89]

Despite a substantial increase in U.S. demand between 2013 and 2015, the domestic industry lost market share during the period to low-priced subject imports and experienced declines in production, capacity utilization, net sales, productivity, and revenues, and its financial performance declined, moving from a small positive operating income in 2013 to substantial operating losses in 2014 and 2015. Although a few performance indicators for the domestic industry increased during the period, such as capacity, U.S. shipments, and most employment indicators, the *** increases in these indicators were below the *** percent increase in apparent U.S. consumption.[90]

U.S. producers' capacity increased by 3.8 percent overall from 2013 to 2015, increasing from 3.9 million short tons in 2013 to 4.0 million short tons in 2014 and 2015.[91] Production declined by 4.0 percent overall from 2013 to 2015, declining from 3.5 million short tons in 2013

[87] The statute instructs the Commission to consider the "magnitude of the dumping margin" in an antidumping proceeding as part of its consideration of the impact of imports. 19 U.S.C. § 1677(7)(C)(iii)(V). In its final determination of sales at less value Commerce found a weighted-average antidumping duty margin of 493.46 percent for the PRC-Wide Entity. *Ammonium Sulfate from the People's Republic of China: Final Affirmative Determination of Sales at Less Than Fair Value,* 82 Fed. Reg. 8403, 8404 (Jan. 25, 2017). We take into account in our analysis the fact that the Department of Commerce has found that all subject producers in China are selling subject imports in the United States at less than fair value. In addition to this consideration, our impact analysis has also considered other factors affecting domestic prices. Our analysis of the significant price effects of the subject imports, described in both the price effects discussion and below, is particularly probative to an assessment of the impact of the subject imports.

[88] 19 U.S.C. § 1677(7)(C)(iii); *see also* SAA at 851 and 885 ("In material injury determinations, the Commission considers, in addition to imports, other factors that may be contributing to overall injury. While these factors, in some cases, may account for the injury to the domestic industry, they also may demonstrate that an industry is facing difficulties from a variety of sources and is vulnerable to dumped or subsidized imports.").

[89] 19 U.S.C. § 1677(7)(C)(iii). This provision was amended by the Trade Preferences Extension Act of 2015, Pub. L. 114-27.

[90] CR/PR at Table C-1.

[91] CR/PR at Tables III-4, C-1. Capacity was 3.0 million short tons in interim 2015 and interim 2016. *Id.*

and 2014 to 3.3 million short tons in 2015.[92] Capacity utilization declined from 89.1 percent in 2013 to 86.8 percent in 2014, and to 82.4 percent in 2015.[93]

Net sales quantity declined by 2.2 percent overall from 2013 to 2015, increasing from 3.2 million short tons in 2013 to 3.5 million short tons in 2014, and then declining to 3.1 million short tons in 2015.[94] U.S. shipments increased by *** percent overall from 2013 to 2015, increasing from *** short tons in 2013 to *** short tons in 2014, and then declining to *** short tons in 2015.[95] [96] U.S. producers' ending inventories declined by 25.9 percent overall from 2013 to 2015, declining from 422,981 short tons in 2013 to 242,921 short tons in 2014, and then increasing to 313,336 short tons in 2015.[97]

The domestic industry's share of apparent U.S. consumption declined from *** percent in 2013 to *** percent in 2014, and then to *** percent in 2015.[98] The domestic industry lost *** percentage points of market share between 2013 and 2015, while subject imports gained *** percentage points of market share during the same period.[99]

Employment indicators were mixed, with increases in employment, hours worked, and wages paid between 2013 and 2015, but a decline in productivity. Employment increased by 2.8 percent from 2013 to 2015, increasing from 633 production-related workers (PRWs) in 2013 to 647 PRWs in 2014 and to 651 PRWs in 2015.[100] Hours worked increased by 6.9 percent from 2013 to 2015, increasing from 1.4 million hours in 2013 to 1.6 million hours in 2014, and then

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[92] CR/PR at Tables III-4, C-1. Production was 2.5 million short tons in interim 2015 and 2.6 million short tons in interim 2016. *Id.*

[93] CR/PR at Tables III-4, C-1. Capacity utilization was 82.0 percent in interim 2015 and 84.4 percent in interim 2016. *Id.*

[94] CR/PR at Tables VI-1, C-1. Net sales were 2.4 million short tons in interim 2015 and 2.3 million short tons in interim 2016. *Id.*

[95] CR/PR at Tables III-5, C-1. U.S. shipments were *** short tons in interim 2015 and *** short tons in interim 2016. *Id.*

[96] U.S. producers' export shipments declined by *** percent between 2013 and 2015. Export shipments increased from *** short tons in 2013 to *** short tons in 2014, and then declined to *** short tons in 2015. They were *** short tons in interim 2015, and *** short tons in interim 2016. CR/PR at Tables III-5, C-1. U.S. producers' exports were adversely affected by Mexico's imposition of definitive antidumping duties in October 2015 on imports of ammonium sulfate from the United States and China. CR at VII-11; PR at VII-7; Hearing Tr. at 75-76 (Hamilton). Despite the antidumping duty order in Mexico, U.S. producers' export shipments were *** percent higher in interim 2016 than in interim 2015. CR/PR at Table C-1.

[97] CR/PR at Tables III-7, C-1. U.S. producers' ending inventories were 272,053 short tons in interim 2015 and 409,589 short tons in interim 2016. *Id.*

[98] CR/PR at Tables IV-6, C-1. The domestic industry's share of apparent U.S. consumption was *** percent in interim 2015 and *** percent in interim 2016. *Id.*

[99] Subject imports as a share of apparent U.S. consumption increased from *** percent in 2013 to *** percent in 2014, and then to *** percent in 2015. They were *** percent in interim 2015 and *** percent in interim 2016. CR/PR at Tables IV-6, C-1.

[100] CR/PR at Tables III-8, C-1. Employment was 654 PRWs in interim 2015 and 648 PRWs in interim 2016. *Id.*

declining to 1.5 million hours in 2015.[101] Wages paid increased by 11.0 percent from 2013 to 2015, increasing from $53.0 million in 2013 to $57.9 million in 2014, and then to $58.9 million in 2015.[102] Productivity declined by 10.2 percent from 2013 to 2015, declining (in short tons per hour) from 2.4 in 2013 to 2.2 in 2014 and 2015.[103]

The domestic industry's financial performance deteriorated substantially between 2013 and 2015, as its revenues declined while it lost market share and cut prices due to competition from low-priced subject imports. Net sales value declined by 15.3 percent overall from 2013 to 2015, falling from $645.7 million in 2013 to $589.7 million in 2014, and then to $546.9 billion in 2015.[104] Total COGS declined by 9.5 percent overall from 2013 to 2015, increasing from $577.6 million in 2013 to $610.6 million in 2014, and then declining to $522.5 million in 2015.[105] The ratio of COGS to net sales increased from 89.4 percent in 2013 to 103.6 percent in 2014, before declining to 95.5 percent in 2015.[106] The industry's gross profit declined by 64.2 percent between 2013 and 2015, with a profit of $68.1 million in 2013, a loss of $20.9 million in 2014, and a profit of $24.4 million in 2015.[107] The industry had operating income of $725,000 in 2013, and operating losses of $81.3 million in 2014 and $159.4 million in 2015.[108] The industry's operating income margin was 0.1 percent in 2013, negative 13.8 percent in 2014 and negative 29.1 percent in 2015.[109] The industry had net losses of $10.1 million in 2013, $88.9 million in 2014, and $165.8 million in 2015.[110] Capital expenditures increased from $66.5 million in 2013 to $81.7 million in 2014, and then declined to $52.0 million in 2015.[111]

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[101] CR/PR at Tables III-8, C-1. Hours worked were 1.2 million hours in interim 2015 and interim 2016. *Id.* We note that Tables III-8 and C-1, due to a tabulation error, erroneously report the number of hours worked in interim 2015 as 7,093,000 hours.

[102] CR/PR at Tables III-8, C-1. Wages paid were $43.8 million in interim 2015 and $46.7 million in interim 2016. *Id.*

[103] CR/PR at Tables III-8, C-1. Productivity (in short tons per hour) was 2.1 in interim 2015 and interim 2016. *Id.* We note that Tables III-8 and C-1, due to a tabulation error, erroneously report the productivity in interim 2015 as 0.3 short tons per hour.

[104] CR/PR at Tables VI-I, C-1. Net sales value was $433.2 million in interim 2015 and $368.7 million in interim 2016. *Id.*

[105] CR/PR at Tables VI-I, C-1. Total COGS was $416.4 million in interim 2015 and $330.3 million in interim 2016. *Id.*

[106] CR/PR at Tables VI-1, C-1. The COGS to net sales ratio was 96.1 percent in interim 2015 and 89.6 percent in interim 2016. *Id.*

[107] CR/PR at Tables VI-I, C-1. Gross profit was $16.8 million in interim 2015 and $38.4 million in interim 2016. *Id.*

[108] CR/PR at Tables VI-I, C-1. The industry had an operating loss of $134.0 million in interim 2015 and operating income of $8.6 million in interim 2016. *Id.*

[109] CR/PR at Tables VI-I, C-1. The operating income margin was negative 30.9 percent interim 2015 and positive 2.3 percent in interim 2016. *Id.*

[110] CR/PR at Tables VI-I, C-1. The industry had a net loss of $138.6 million in interim 2015 and net income of $3.7 million in interim 2016. *Id.*

[111] CR/PR at Table VI-5. Capital expenditures were $34.6 million in interim 2015 and $50.5 million in interim 2016. *Id.* Research and development expenses were $1.9 million in 2013, $2.3 million (Continued...)

The large and increasing volume of low-priced subject imports caused the domestic industry to lose *** percentage points of market share from 2013 to 2015. Subject imports gained market share through significant underselling of the domestic like product, and caused significant depression of U.S. producers' prices during this period. The loss of market share to low-priced subject imports caused declines in the domestic industry's production, capacity utilization, net sales, productivity, and revenues. While there were *** increases in the domestic industry's U.S. shipments and most of its employment indicators, those increases were *** the *** percent increase in U.S. apparent consumption. The domestic industry's revenues were adversely affected at a time of increased U.S. demand because the industry lost market share and was required to reduce prices as a result of subject import competition. This led to sharply deteriorating financial performance between 2013 and 2015. We accordingly find that the subject imports had a significant impact on the domestic industry.

In our analysis of the impact of subject imports on the domestic industry, we have taken into account whether there are other factors that may have had an adverse impact on the domestic industry during the POI to ensure that we are not attributing injury from other factors to the subject imports. We have accordingly considered the role of nonsubject imports in these investigations. The market share of nonsubject imports declined by *** percentage points between 2013 and 2015,[112] so nonsubject imports cannot explain the decline in the domestic industry's market share over that period. While the market share of nonsubject imports was higher in interim 2016, when the presence of subject imports in the U.S. market diminished, than in 2015,[113] the domestic industry's market share and its financial performance were better in interim 2016 than in interim 2015.[114] The improvement in the domestic industry's performance in interim 2016 when subject imports reduced their presence in the U.S. market underscores that the adverse effects of the subject imports are distinguishable from any effects attributable to the nonsubject imports.

We therefore conclude that the subject imports have a significant impact on the domestic industry.

(…Continued)
in 2014, and $2.5 million in 2015. They were $2.1 million in interim 2015 and $1.9 million in interim 2016. *Id.*

[112] The market share of nonsubject imports declined from *** percent in 2013 to *** percent in 2014, and then to *** percent in 2015. CR/PR at Table IV-6.

[113] The market share of nonsubject imports was *** percent in interim 2015 and *** percent in interim 2016. CR/PR at Table IV-6.

[114] The domestic industry's share of apparent U.S. consumption was *** percent in interim 2015 and *** percent in interim 2016. CR/PR at Tables IV-6, C-1. The industry had an operating loss of $134.0 million in interim 2015 and operating income of $8.6 million in interim 2016. CR/PR at Tables VI-I, C-1.

V. Conclusion

For the reasons stated above, we determine that an industry in the United States is materially injured by reason of subject imports of ammonium sulfate from China that are sold in the United States at less than fair value and subsidized by the government of China.

PART I: INTRODUCTION

BACKGROUND

These investigations result from a petition filed with the U.S. Department of Commerce ("Commerce") and the U.S. International Trade Commission ("USITC" or "Commission") by PCI Nitrogen, LLC ("PCI"), Pasadena, Texas, on May 25, 2016, alleging that an industry in the United States is materially injured and threatened with material injury by reason of subsidized and less-than-fair-value ("LTFV") imports of ammonium sulfate [1] from China. The following tabulation provides information relating to the background of these investigations.[2] [3]

Effective date	Action
May 25, 2016	Petition filed with Commerce and the Commission; institution of Commission investigations (81 FR 35055, June 1, 2016)
June 14, 2016	Commerce's notices of initiation, countervailing duty (81 FR 40661, June 22, 2016) and antidumping (81 FR 40665, June 22, 2016)
July 11, 2016	Commission's preliminary determinations (81 FR 45533, July 14, 2016)
October 24, 2016	Scheduling of final phase of Commission investigations (81 FR 78631, November 8, 2016)
November 2, 2016	Commerce's preliminary countervailing duty determination (81 FR 76332)
November 9, 2016	Commerce's preliminary antidumping duty determination (81 FR 78776)
January 12, 2017	Commission's hearing
January 17, 2017	Commerce's final countervailing duty determination (82 FR 4850)
January 25, 2017	Commerce's final antidumping duty determination (82 FR 8403
February 8, 2017	Commission's vote
March 2, 2017	Commission's determinations and views

[1] See the section entitled "The Subject Merchandise" in *Part I* of this report for a complete description of the merchandise subject to these investigations.

[2] Pertinent *Federal Register* notices are referenced in appendix A, and may be found at the Commission's website (www.usitc.gov).

[3] A list of witnesses appearing at the hearing is presented in appendix B of this report.

STATUTORY CRITERIA AND ORGANIZATION OF THE REPORT

Statutory criteria

Section 771(7)(B) of the Tariff Act of 1930 (the "Act") (19 U.S.C. § 1677(7)(B)) provides that in making its determinations of injury to an industry in the United States, the Commission—

> *shall consider (I) the volume of imports of the subject merchandise, (II) the effect of imports of that merchandise on prices in the United States for domestic like products, and (III) the impact of imports of such merchandise on domestic producers of domestic like products, but only in the context of production operations within the United States; and. . . may consider such other economic factors as are relevant to the determination regarding whether there is material injury by reason of imports.*

Section 771(7)(C) of the Act (19 U.S.C. § 1677(7)(C)) further provides that--[4]

> *In evaluating the volume of imports of merchandise, the Commission shall consider whether the volume of imports of the merchandise, or any increase in that volume, either in absolute terms or relative to production or consumption in the United States is significant.. . .In evaluating the effect of imports of such merchandise on prices, the Commission shall consider whether. . .(I) there has been significant price underselling by the imported merchandise as compared with the price of domestic like products of the United States, and (II) the effect of imports of such merchandise otherwise depresses prices to a significant degree or prevents price increases, which otherwise would have occurred, to a significant degree.. . . In examining the impact required to be considered under subparagraph (B)(i)(III), the Commission shall evaluate (within the context of the business cycle and conditions of competition that are distinctive to the affected industry) all relevant economic factors which have a bearing on the state of the industry in the United States, including, but not limited to. . . (I) actual and potential decline in output, sales, market share, gross profits, operating profits, net profits, ability to service debt, productivity, return on investments, return on assets, and utilization of capacity, (II) factors affecting domestic prices, (III) actual and potential negative effects on cash flow, inventories, employment, wages, growth, ability to raise capital, and investment, (IV) actual and potential negative*

[4] Amended by PL 114-27 (as signed, June 29, 2015), Trade Preferences Extension Act of 2015.

effects on the existing development and production efforts of the domestic industry, including efforts to develop a derivative or more advanced version of the domestic like product, and (V) in {an antidumping investigation}, the magnitude of the margin of dumping.

In addition, Section 771(7)(J) of the Act (19 U.S.C. § 1677(7)(J)) provides that—[5]

(J) EFFECT OF PROFITABILITY.—The Commission may not determine that there is no material injury or threat of material injury to an industry in the United States merely because that industry is profitable or because the performance of that industry has recently improved.

Organization of report

Part I of this report presents information on the subject merchandise, subsidy and dumping margins, and domestic like product. *Part II* of this report presents information on conditions of competition and other relevant economic factors. *Part III* presents information on the condition of the U.S. industry, including data on capacity, production, shipments, inventories, and employment. *Parts IV* and *V* present the volume of subject imports and pricing of domestic and imported products, respectively. *Part VI* presents information on the financial experience of U.S. producers. *Part VII* presents the statutory requirements and information obtained for use in the Commission's consideration of the question of threat of material injury as well as information regarding nonsubject countries.

MARKET SUMMARY

Ammonium sulfate is used primarily as a fertilizer, particularly in situations where there is a need for supplemental nitrogen and sulfur to meet the nutritional requirements of growing plants or trees. It is used on a variety of crops and turf including corn, alfalfa, cotton, canola, potatoes, soybeans, wheat, citrus, and rice, as well as fruit and nut trees. Ammonium sulfate is normally blended with other solid fertilizers for field applications. Ammonium sulfate can also be used in industrial applications, including in the production of flame retardant materials, food and feed additives, biotechnology products, textiles, leather, wall board, and pulp and paper products. Industrial use makes up a small portion of the market for ammonium sulfate in the United States.[6]

[5] Amended by PL 114-27 (as signed, June 29, 2015), Trade Preferences Extension Act of 2015.

[6] Most producers indicated that the end uses of their ammonium sulfate are primarily for agricultural or fertilizer uses. ***.

The petition identified 25 U.S. producers of ammonium sulfate, 11 of which provided usable questionnaire responses (except where otherwise noted). The leading U.S. producers of ammonium sulfate are ***.[7] [8]

The leading U.S. importer of ammonium sulfate from China is ***. Leading producers of ammonium sulfate from China include Bluestar-Adisseo Nanjing Co., Ltd.[9]

Apparent U.S. consumption of ammonium sulfate totaled approximately *** short tons ($***) in 2015. Responding U.S. producers' U.S. shipments of ammonium sulfate totaled *** short tons ($***) in 2015, and accounted for *** percent of apparent U.S. consumption by quantity and *** percent by value. U.S. imports from subject sources totaled 369,570 short tons ($68.3 million) in 2015 and accounted for *** percent of apparent U.S. consumption by quantity and *** percent by value. U.S. imports from nonsubject sources totaled 231,635 short tons ($45.2 million) in 2015 and accounted for *** percent of apparent U.S. consumption by quantity and *** percent by value.[10]

SUMMARY DATA AND DATA SOURCES

A summary of data collected in these investigations is presented in appendix C, table C-1. Except as noted, U.S. industry data are based on questionnaire responses of 11 firms that accounted for a vast majority of U.S. production of ammonium sulfate during 2015. U.S. imports are based on official U.S. import statistics under statistical reporting number 3102.21.0000, accessed November 7, 2016.

PREVIOUS AND RELATED INVESTIGATIONS

Ammonium sulfate has not been the subject of any prior countervailing and/or antidumping duty investigations in the United States. Ammonium sulfate is similar to other types of nitrogen fertilizer, such as urea, urea ammonium nitrate ("UAN"), and anhydrous ammonia. The Commission has conducted investigations and reviews of these other forms of nitrogen fertilizers, and, in each instance, has determined that each type is its own separate like product.[11]

---

[7] ***.

[8] ***.

[9] Bluestar-Adisseo Nanjing Co., Ltd. was the only foreign producer from the subject country to respond to the Commission's questionnaires. See Part VII for more detail.

[10] In its prehearing brief, the Petitioner asserted that U.S. producer *** reported producing material that Petitioner considered to be out-of-scope. Consequently, Petitioner's counsel calculated alternative values for market share for the domestic industry and subject imports, as well as average unit values for the domestic industry. See Parts III and IV for more information.

[11] *Urea Ammonium Nitrate Solutions from Belarus, Lithuania, Russia, and Ukraine, Inv. Nos. 731-TA-1006-1009 (Preliminary)*, USITC Pub. 3517 (June 2002), *Urea Ammonium Nitrate Solutions from Belarus, Lithuania, Russia, and Ukraine, Inv. Nos. 731-TA-1006-1009 (Final)*, USITC Pub. 3591 (April 2003), ("Respondents argued that the domestic like product should be expanded to include other chemicals

(*continued*...)

NATURE AND EXTENT OF SUBSIDIES AND SALES AT LTFV

Subsidies

On January 17, 2017, Commerce published a notice in the *Federal Register* of its final determination of countervailable subsidies for producers and exporters of product from China.[12] Table I-1 presents Commerce's findings of subsidization of ammonium sulfate in China. Commerce determined the following programs in China to be countervailable:[13]

- **Tax Programs:** Income Tax Benefits for Domestically-Owned Enterprises Engaging in Research and Development (R&D); Income Tax Credits for Domestically-Owned Companies Purchasing Domestically-Produced Equipment; Preferential Deduction of R&D Expenditures for High or New Technology Enterprises ("HNTEs"); Preferential Income Tax for Comprehensive Utilization of Resources; Preferential Income Tax Program for HNTEs; Preferential Income Tax Program for HNTEs in Designated Zones; Preferential Income Tax Subsidies for Foreign Invested Enterprises (FIEs) – Export-Oriented FIEs; Preferential Income Tax Rate for FIEs – High or New Technology FIEs; Preferential Income Tax Subsidies for FIEs – 'Productive' FIEs; Reduction in, or Exemption from, the Fixed Assets Investment Orientation Regulatory Tax; Stamp Exemption on Share Transfer Under Non-Tradable Share Reform; Value Added Tax ("VAT") and Tariff Exemptions for Imported Equipment; VAT Exemptions for Certain Nitrogen Fertilizers; VAT Rebates Related to the Comprehensive Utilization of Resources and Other Products; and VAT Refunds for FIEs Purchasing Domestically-Produced Equipment;

(…*continued*)
that are used as nitrogen-based fertilizers: urea, ammonium nitrate, and anhydrous ammonia. The Commission found significant differences in physical and chemical properties, uses, and prices, as well as limited interchangeability among these other chemicals and UAN. Accordingly, the Commission defined the domestic like product coextensively with the product described in the scope of these investigations, i.e., UAN."). *Urea from the German Democratic Republic, Romania, and the Union of Soviet Socialist Republics, Inv. Nos. 731-TA-338-340 (Final)*, USITC Pub. 1992 (July 1987) (The Commission found one like product consisting of solid urea). *Ammonium Nitrate from Russia, Inv. No. 731-TA-856 (Final)*, USITC Pub. 3338 (Aug. 2000), ("The record in the final phase investigation, as that in the preliminary phase, indicates clear distinctions between ammonium nitrate and other nitrogen-based fertilizers with respect to product characteristics.").

[12] *Ammonium Sulfate From the People's Republic of China: Final Affirmative Countervailing Duty Determination*, 82 FR 4850, January 17, 2017.

[13] The Preliminary Decision Memorandum was incorporated by reference and adopted by Commerce's final determination in this investigation. *Decision Memorandum for the Prelmiinary Affirmative Determination in the Countervailing Duty Investigation of Ammonium Sulfate from the People's Republic of China*, October 24, 2016.

- **Land for Less Than Adequate Remuneration ("LTAR"):** Provision of Land to Enterprises in Encouraged Industries for LTAR; Provision of Land to Enterprises in Industrial Zones for LTAR; Exemptions from Administrative Charges for Companies in Industrial Zones; and Provision of Land to SOEs for LTAR;

- **Inputs for LTAR:** Provision of Ammonia for LTAR; Provision of Coal for LTAR; Provision of Electricity for LTAR; Provision of Freight for LTAR; and Provision of Natural Gas for LTAR

- **Loan Programs:** Policy Loans to the Ammonium Sulfate Industry; Preferential Loans for State-Owned Enterprises (SOEs); Preferential Export Financing; Preferential Loans for Key Projects and Technologies; and Loans and Interest Forgiveness for SOEs.

- **Grants and Other Programs:** Clean Production Technology Fund; Environmental Protection Special Fund; Exemption from Payments to the Railway Construction Fund for Agriculture-Use Fertilizers; Fertilizer Off-Season Commercial Reserve Program; Grants to Cover Legal Fees in Trade Remedy Cases; Grants for Listing Shares; Special Fund for Energy Saving Technology Reform; and State Key Technology Renovation Fund

Table I-1
Ammonium sulfate: Commerce's final subsidy determination

Company	Subsidy Rate (*percent*)
Wuzhoufeng Agricultural Science & Technology Co. Ltd	206.72
Yantai Jiahe Agriculture Means of Production Co. Ltd	206.72
All others	206.72

Source: 82 FR 4850, January 17, 2017.

Sales at LTFV

On January 25, 2017, Commerce published a notice in the Federal Register of its final determination of sales at LTFV with respect to imports from China.[14] Table I-2 presents Commerce's dumping margins with respect to imports of subject product from China.[15]

[14] *Ammonium Sulfate From the People's Republic of China: Final Affirmative Determination of Sales at Less Than Fair Value*, 82 FR 8403, January 25, 2017.

[15] For additional information concerning Commerce's final determination of sales at less than fair value, see *Decision Memorandum for the Preliminary Determination of the Less Than Fair Value Investigation of Ammonium Sulfate from the People's Republic of China*, November 1, 2016.

Table I-2
Ammonium sulfate: Commerce's final weighted-average LTFV margin

Exporter/Producer	Final dumping margin (*percent*)
PRC-Wide Entity	493.46

Source: 82 FR 8403, January 25, 2017.

THE SUBJECT MERCHANDISE

Commerce's scope[16]

Commerce has defined the scope of these investigations as follows:

> The merchandise covered by this investigation is ammonium sulfate in all physical forms, with or without additives such as anti-caking agents. Ammonium sulfate, which may also be spelled as ammonium sulphate, has the chemical formula $(NH_4)_2SO_4$.
>
> The scope includes ammonium sulfate that is combined with other products, including by, for example, blending (i.e., mixing granules of ammonium sulfate with granules of one or more other products), compounding (i.e., when ammonium sulfate is compacted with one or more other products under high pressure), or granulating (incorporating multiple products into granules through, e.g., a slurry process). For such combined products, only the ammonium sulfate component is covered by the scope of this investigation.
>
> Ammonium sulfate that has been combined with other products is included within the scope regardless of whether the combining occurs in countries other than China.
>
> Ammonium sulfate that is otherwise subject to this investigation is not excluded when commingled (i.e., mixed or combined) with ammonium sulfate from sources not subject to this investigation. Only the subject component of such commingled products is covered by the scope of this investigation.
>
> The Chemical Abstracts Service (CAS) registry number for ammonium sulfate is 7783-20-2.

[16] *Ammonium Sulfate From the People's Republic of China: Final Affirmative Countervailing Duty Determination, 82 FR 4850, January 17, 2017.*

The merchandise covered by this investigation is currently classifiable under Harmonized Tariff Schedule of the United States (HTSUS) subheading 3102.21.0000. Although this HTSUS subheading and CAS registry number are provided for convenience and customs purposes, the written description of the scope of the investigation is dispositive.

Tariff treatment

Based upon the scope set forth by the Department of Commerce, information available to the Commission indicates that the merchandise subject to these investigations is provided for in subheading 3102.21.00 of the Harmonized Tariff Schedule of the United States ("HTS"), a provision naming this compound as a nitrogenous mineral or chemical fertilizer. The general duty rate for this subheading is free.[17]

THE PRODUCT

Description and applications

Ammonium sulfate is a solid, crystalline salt, primarily used as a fertilizer. Like other fertilizers such as ammonium nitrate, ammonium phosphate, and urea, ammonium sulfate is a source of nitrogen for soil. However unlike other nitrogenous fertilizers, ammonium sulfate is also a source of sulfur, used by plants to make amino acids and chlorophyll.[18] Ammonium sulfate is especially applicable for use in growing crops such as cotton and canola that require a relatively high level of sulfur[19] and ***. Usage of ammonium sulfate as a fertilizer has increased as sulfur depositions in soil have decreased due to tighter control of air pollution.[20] Beyond crop fertilization, ammonium sulfate is used in small amounts in wallboard, flame proofing, ***.[21]

Ammonium sulfate comes in a variety of grades including granular, standard, soluble fines, and in aqueous solution. Granular grade, which, due to its relatively large particle size (typically 2.5 millimeters) is well-suited for mixing with other fertilizers and application by spreading machines,[22] accounts for the vast majority of the U.S. market. Standard grade, with smaller particle size (less than 2 millimeters), is well suited to applications that do not require

[17] Decisions on the tariff classification and treatment of imported goods are solely within the authority of U.S. Customs and Border Protection ("Customs").

[18] Hearing transcript, p. 26 (Hamilton).

[19] Hearing transcript, p. 81 (Hamilton).

[20] Hearing transcript, p. 25 (Hamilton). A portion of atmospheric sulfur is deposited in soil. Regulations to control air pollution reduced the amount of atmospheric sulfur.

[21] ***.

[22] Hearing transcript, p. 26 (Hamilton).

mechanical spreading, including in orchards or lower technology farms in developing countries.[23]

Manufacturing processes

Ammonium sulfate is produced by the reaction of ammonia and sulfuric acid. This is either done through direct synthesis, or as a co-product of manufacturing processes that, for either pollution control or commercial reasons, benefit from the capture of produced ammonia or sulfuric acid. Estimates of the relative importance of the different production processes vary, but three processes likely account for approximately 90 percent of ammonium sulfate production, both globally and in the United States:[24]

- Co-product of caprolactam production. Ammonium sulfate is produced at several stages of the classical process for making caprolactam,[25] a precursor to nylon. Roughly half of global ammonium sulfate production capacity is caprolactam co-production, making it the most important manufacturing process. The classical caprolactam synthesis process produces approximately 4 to 4.5 tons of ammonium sulfate for every ton of caprolactam. However, newer caprolactam manufacturing processes produce less ammonium sulfate per ton of caprolactam.[26]

- Direct synthesis. As a primary product, ammonium sulfate is produced by the neutralization of ammonium with sulfuric acid.[27] Ammonium sulfate is recovered by crystallization, allowing for relatively large particle size with little variation.

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[23] Hearing transcript, pp. 26-7 (Hamilton).

[24] ***. *Fertilizer International* estimates are as follows: caprolactam: 46 percent; coke-oven gas: 16 percent; emissions: 13 percent; synthetic: 11 percent.

[25] First, ammonium sulfate is formed when an initial ammonium nitrite solution is converted to hydroxylamine sulfate via sulfur dioxide. Second, the hydroxylamine sulfate is reacted with ammonia to convert cyclohexanone to oxime, producing additional ammonium sulfate. Finally, caprolactam is formed by a rearrangement reaction using oleum as the catalyst. This material is then neutralized with ammonia, forming free caprolactam and ammonium sulfate.

Ammonium sulfate crystals are formed by circulating an ammonium sulfate liquor through a water evaporator, which thickens the solution. The crystals are then separated from the liquor in a centrifuge. The crystals, which contain about 1 to 2.5 percent moisture by weight after the centrifuge, are fed to either a fluidized-bed or a rotary drum dryer. Fluidized-bed dryers are continuously steam heated, while the rotary dryers are fired directly with either oil or natural gas or may use steam-heated air. After being dried, the ammonium sulfate crystals are screened into different sized crystals. This screening is done in an enclosed area to restrict fugitive dust from forming. Petition, Vol. 1, pp. 5-7.

[26] Including processes that use direct oximation and/or alternative rearrangement catalysts.

[27] In the synthetic production process, ammonium sulfate solution is formed by directly reacting anhydrous ammonia with sulfuric acid in a reactor/saturator. This is an exothermic chemical reaction. The hot ammonium sulfate slurry is then sprayed onto solid recycle granules in a special, rotating vessel

(*continued*...)

- Coking. The coking of coal produces gas that contains ammonia. Treating this gas with sulfuric acid yields ammonium sulfate.[28] ***.[29]

Other production methods include treatment of sulfuric acid in emissions produced in burning coal; as a co-product during methyl methacrylate manufacture and nickel pressure acid leaching (Ni-PAL); and treatment of ammonium extracted from sewage.[30] [31] [32]

Higher-value granular ammonium sulfate can either result directly from production or be formed after production by compacting standard grade under high pressure to achieve larger, more uniform particle sizes.[33] ***. Petitioner claims that the majority of ammonium sulfate imported from China is compacted granular material.[34]

(…*continued*)
called a granulator. Coating recycled granules with the slurry solution in the presence of ammonia vapor forms finished ammonium sulfate granules. The granules are transferred to the screening, crushing and cooling section and are separated into three sizes by vibrating screens. Oversize granules are transferred to chain mills that crush them into smaller sizes. They are then mixed with the undersize granules and recycled to the granulator. Acceptable sized granules are cooled further, coated with an anti-dust chemical and transferred to storage. Petition, Vol. 1, pp. 5-7.

[28] Coke oven gas contains about 1 percent NH_3 by volume. This gas is cooled and passed into saturators containing H_2SO_4, forming $(NH_4)_2SO_4$ crystals. This process is employed in steel plants where large coke-oven batteries are in operation.

In the coking process, ammonium sulfate crystals are formed by circulating ammonium sulfate liquor through a water evaporator, which thickens the solution. Ammonium sulfate crystals are then separated from the liquor in a centrifuge. The crystals, which contain about 1 to 2.5 percent moisture by weight after the centrifuge, are fed to either a fluidized-bed or a rotary drum dryer. Fluidized-bed dryers are continuously steam heated, while the rotary dryers are fired directly with either oil or natural gas or may use steam-heated air. Rotary vacuum filters may be used in place of a centrifuge and dryer. The crystal layer is deposited on the filter and is removed as product. These crystals are then carried by conveyors to bulk storage. After being dried, the ammonium sulfate crystals are screened into different sized crystals. This screening is done in an enclosed area to restrict fugitive dust from forming. Petition, Vol. 1, pp. 5-7.

[29] ***.

[30] "Ammonium sulphate heads from east to west," *Fertilizer International*, November-December, 2015, p. 20.

[31] Background Report AP-42 Section 6.18 Ammonium Sulfate, U.S. Environmental Protection Agency (1996), p. 2, Petition exhibit I-8.

[32] Background Report AP-42 Section 6.18 Ammonium Sulfate, U.S. Environmental Protection Agency (1996), p. 2, Petition exhibit I-8.

[33] Conference transcript, p. 68 (Mazzella Sr.).

[34] Petition, Vol. 1, p. 14.

DOMESTIC LIKE PRODUCT ISSUES

No issues with respect to domestic like product have been raised in these investigations. At the hearing, counsel for Petitioners asserted that "…the domestic like product should be defined commensurate with the scope definition."[35]

[35] Hearing transcript, p. 7 (Orava).

PART II: CONDITIONS OF COMPETITION IN THE U.S. MARKET

U.S. MARKET CHARACTERISTICS

Ammonium sulfate is used primarily in agricultural and, to a lesser extent, industrial applications. Demand for ammonium sulfate is generally driven by demand from the agricultural industry for use in fertilizer, specifically for the replenishment of sulfur in soils. Ammonium sulfate is typically sold in granular and standard forms consisting of the same nutrient values[1] and differentiated by particle size (approximately 2.5 millimeters for granular form and under 2 millimeters for standard form).[2] Higher grades of ammonium sulfate, large crystalized and granular forms, typically command a price premium due to their use in mechanized, sophisticated farming.[3]

Apparent U.S. consumption of ammonium sulfate increased during 2013-2015 from *** to *** short tons.[4] Overall, apparent U.S. consumption in 2015 was *** percent higher than in 2013.

U.S. PURCHASERS

The Commission received 21 usable questionnaire responses from firms that bought ammonium sulfate since January 1, 2013.[5] Thirteen responding purchasers are distributors, ten are retailers, one is an agricultural end user, and one is a ***.[6] In general, most responding U.S. purchasers were located in the Midwest and the Southeast. The largest purchasers of ammonium sulfate in 2015 were ***, representing more than *** percent of total 2015 purchases.

CHANNELS OF DISTRIBUTION

U.S. producers and importers of ammonium sulfate from China sold mainly to distributors, as shown in table II-1.

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[1] Conference transcript, p. 12 (Vaughn).

[2] Conference transcript, p. 27-28 (Hamilton).

[3] Fertilizer International, *Ammonium Sulphate Heads from East to West*, Dec. 2015, p. 20; Conference transcript, p. 50 (Vaughn).

[4] Apparent U.S. consumption was *** short tons in January-September 2015 and *** short tons in January-September 2016.

[5] Of the 21 responding purchasers, 18 purchased domestic ammonium, 10 purchased imports of the subject merchandise from China, 5 purchased imports of ammonium sulfate from Canada, 2 from other known sources, and 6 from unknown sources.

[6] Purchasers *** reported they were both distributors and retailers.

Table II-1
Ammonium sulfate: U.S. producers' and importers' U.S. commercial shipments, by sources and channels of distribution, 2013-15, January-September 2015, January-September 2016

Item	Period				
	Calendar year			January-September	
	2013	2014	2015	2015	2016
	Share of reported shipments (*percent*)				
U.S. producers' U.S. commercial shipments of ammonium sulfate:					
Distributors	74.0	83.5	84.4	82.3	80.7
End users	26.0	16.5	15.6	17.6	19.3
U.S. importers' U.S. commercial shipments of ammonium sulfate from China:					
Distributors	***	***	***	***	***
End users	***	***	***	***	***
U.S. importers' U.S. commercial shipments of ammonium sulfate from all other countries:					
Distributors	***	***	***	***	***
End users	***	***	***	***	***

Source: Compiled from data submitted in response to Commission questionnaires.

GEOGRAPHIC DISTRIBUTION

U.S. producers and importers reported selling ammonium sulfate to all regions in the contiguous United States (table II-2). For U.S. producers, 16.1 percent of sales were within 100 miles of their production facility, 72.4 percent were between 101 and 1,000 miles, and 11.5 percent were over 1,000 miles. Importers sold *** percent within 100 miles of their U.S. point of shipment and *** percent between 101 and 1,000 miles. *** importers reported sales over 1,000 miles from their U.S. point of shipment.

Table II-2
Ammonium sulfate: Geographic market areas in the United States served by U.S. producers and importers

Region	U.S. producers	Importers
Northeast	6	2
Midwest	10	3
Southeast	9	3
Central Southwest	3	3
Mountain	4	1
Pacific Coast	4	3
Other[1]	1	1
All regions (except Other)	1	0
Reporting firms	11	7

[1] All other U.S. markets, including AK, HI, PR, and VI.

Source: Compiled from data submitted in response to Commission questionnaires.

SUPPLY AND DEMAND CONSIDERATIONS

U.S. supply

Domestic production

Based on available information, U.S. producers of ammonium sulfate have the ability to respond to changes in demand with moderate-to-large changes in the quantity of shipments of U.S.-produced ammonium sulfate to the U.S. market. The main contributing factors to this degree of responsiveness of supply are some availability of unused capacity and the relatively large share of shipments to alternate markets. Factors mitigating responsiveness of supply include limited ability to shift shipments from inventories and limited ability to shift production to or from alternate products.

Industry capacity

Domestic capacity increased from 2013 to 2015 while production decreased during the same period, leading domestic capacity utilization to decline from 89.1 percent in 2013 to 82.4 percent in 2015.[7] This relatively moderate and declining level of capacity utilization suggests that U.S. producers may have some ability to increase production of ammonium sulfate in response to an increase in prices.

Alternative markets

U.S. producers' exports, as a percentage of total shipments, decreased from *** percent in 2013 to *** percent in 2015.[8] U.S. producers' export shipments declined from *** short tons in 2013 to *** short tons in 2015, indicating that U.S. producers may have substantial ability to shift shipments between the U.S. market and other markets in response to price changes. Main export market destinations were *** and generally the regions of ***.

Inventory levels

U.S. producers' inventories, as a ratio of total shipments, fluctuated in 2013-15, declining irregularly from 12.8 percent in 2013 to 9.6 percent in 2015, falling from 422,981 short tons to 313,336 short tons.[9] These inventory levels suggest that U.S. producers may have

[7] Domestic capacity utilization was 84.4 percent in January-September 2016 compared to 82.0 percent in January-September 2015.

[8] U.S. producers export shipments were *** percent of total shipments in January-September 2015 and *** percent in January-September 2016.

[9] U.S. producers' inventories were 8.2 percent of total shipments in January-September 2015 and 12.5 percent from January-September 2016.

some ability to respond to changes in demand with changes in the quantity shipped from inventories.

Production alternatives

Most U.S. producers (10 of 11) stated that they could not switch production from ammonium sulfate to any other product. *** stated that it can produce other ammonium salts with the same equipment and/or labor as it produces ammonium sulfate. Factors affecting U.S. producers' ability to shift production include dedicated assets and production processes, and demand for coke production.

Subject imports from China[10]

Based on available information, producers of ammonium sulfate from China have the ability to respond to changes in demand with moderate changes in the quantity of shipments of ammonium sulfate to the U.S. market. The main contributing factors to this degree of responsiveness of supply are the availability of unused capacity and the existence of alternate markets. Potential factors mitigating responsiveness of supply include limited ability to shift shipments from inventories and the limited ability to shift production to or from alternate products.

Industry capacity

The responding Chinese producer, who reported ***, reported that capacity utilization increased from *** percent in 2013 to *** percent in 2015. A report from the China National Chemical Information Center stated that Chinese capacity utilization was 79.1 percent in 2013.[11] This moderate-to-high level of capacity utilization suggests that Chinese producers may have some ability to increase production of ammonium sulfate in response to an increase in prices.

Alternative markets

The only responding Chinese producer reported that it ***. According to Chinese customs data, China's primary export markets in 2015 were Indonesia (19.5 percent of exports of ammonium sulfate), Vietnam (13.8 percent), and Brazil (11.2 percent); Chinese exports to the United States accounted for 5.4 percent of total Chinese exports of ammonium sulfate in 2015.[12] Chinese exports to other markets indicate that Chinese producers may have some

[10] For data on the number of responding foreign firms and their share of U.S. imports from China, please refer to Part I, "Summary Data and Data Sources."

[11] Petitioner's postconference brief, exh. 11, p. 16.

[12] Official exports statistics under HTS subheading 3102.21 as reported by various national statistical authorities in the IHS/GTA database, accessed November 22, 2016.

ability to shift shipments between domestic or other markets and the U.S. market in response to price changes.

Inventory levels

The responding Chinese producer reported the firm's inventory level, *** short tons, remained constant between 2013 and 2015. This inventory level indicates that it has *** ability to increase shipments from inventory.

Production alternatives

The only responding Chinese producer stated that it *** switch production from ammonium sulfate to any other product.

Supply constraints

Most responding U.S. producers (8 of 11) reported that they did not have supply constraints since January 1, 2013. Three U.S. producers reported supply constraints since January 2013. U.S. producer *** reported a temporary constraint in early 2015 due to production and equipment related issues that have since been resolved. *** reported purchasing ammonium sulfate in 2014 to meet sales commitments due to temporary production issues. U.S. producer *** stated that it "abstained from producing ammonium sulfate due to low market prices".

Six importers and thirteen purchasers reported supply constraints. With respect to purchases of U.S. product, three purchasers referenced supply issues with U.S. producer AdvanSix: *** stated that AdvanSix had limited supply at times and allocated deliveries resulting in some lost business; *** stated that a traditional U.S. supplier (AdvanSix) pulled product back to markets that were closer to its Hopewell, Virginia plant; and *** stated that AdvanSix had a production outage which tightened supply across the whole market in spring 2014. Purchaser *** reported American Plant Food ("APF," related to U.S. producer BASF) had supply constraints. Purchaser *** stated that it encountered difficulty finding a domestic barge in the spring, so it purchased Chinese product.

Importers and purchasers also reported supply constraints that were not attributed to a particular source. One importer of Chinese ammonium sulfate (***) reported allocations during certain periods. Importer *** stated that it was unable to supply in the spring because of a lack of production and that producers sell directly to retailers. Importer *** stated that it very infrequently had supply constraints related to unplanned production outages. Purchaser *** stated that ammonium sulfate was not available from Mississippi and Illinois River terminals. Purchaser *** stated that barge material is typically tight every year during peak season. Purchasers *** stated that at times of peak demand, some firms do not have any product available for sale.

Thirteen purchasers each reported that the availability of U.S.-produced and imported Chinese ammonium sulfate had changed since January 1, 2013 and five reported changes in the availability of product from nonsubject countries. With respect to changes in availability of U.S.

product, *** stated that DSM/Fibrant ceased all domestic production of approximately 300,000 metric tons per year. *** stated that domestic demand outgrew domestic production. *** stated that the availability of domestically produced ammonium sulfate is driven by demand, which corresponds to the conditions in the agricultural economy and other macroeconomic conditions. *** stated that there was more demand but limited equipment to get product moved. *** stated that producers have "debottlenecked" their facilities. With respect to availability of imports of ammonium sulfate from China, purchasers stated that imports have increased to fill the domestic supply void. *** stated that Chinese product has become more aggressively marketed in the United States since January 1, 2013.

Nonsubject imports

Nonsubject imports accounted for 85.7 percent of total U.S. imports in 2013 but declined to 38.5 percent in 2015.[13] [14] Canada was the largest source of nonsubject imports during 2013 to 2015. Imports from Canada decreased from 83.7 percent of total U.S. imports in 2013 to 33.6 percent in 2015.

New suppliers

Eight of 20 purchasers indicated that new suppliers entered the U.S. market since January 1, 2013. Purchasers cited U.S. distributor Interoceanic Corp. ("IOC," related to U.S. producer PCI); importers Gavilon, Trammo, JM Fertilizer, and Nitron Group; and Dreymoor, Helm, Mayo, Petro China (locations not specified). *** stated that it is aware of new Dutch, Spanish, and Chinese suppliers and *** stated it is aware of new Spanish and Lithuanian production.

Product changes

Most responding U.S. producers (10 of 11) and importers (5 of 8) reported that there had not been significant changes in the product range, mix, or marketing of ammonium sulfate since January 1, 2013. U.S. producer *** stated distribution patterns have changed with the increase in imports from China, with imports directly displacing U.S. production and creating significantly lower Mississippi River prices and ultimately inland sales prices. Importer *** stated that it uses ammonium sulfate blended with urea as a replacement for ammonium nitrate. Importer *** stated that "more people are pushing sulfur because of regulation on ammonium nitrate." Importer *** stated that Chinese granular product is competitive in international markets.

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[13] Nonsubject imports were 38.5 percent of total U.S. imports in January-September 2015 and were 60.6 percent in January-September 2016.

[14] Compiled from official import statistics, using HTS statistical reporting number 3102.21.0000, accessed November 7, 2016

U.S. demand

Based on available information, the overall demand for ammonium sulfate is likely to experience small-to-moderate changes in response to changes in price. The main contributing factors are a limited range of close substitute products and the moderate, though varying, cost share of ammonium sulfate in most of its end-use products.

End uses and cost share

U.S. demand for ammonium sulfate depends on the demand for U.S.-produced downstream products. The largest end-use market for ammonium sulfate is the agricultural industry, which uses ammonium sulfate as a component in fertilizer for crops. Firms reported that granular ammonium sulfate is required for consistent blend quality in fertilizers. The industrial sector is another smaller end-use market, with reported end uses of wall board, leather tanning, fire extinguisher chemicals, textile dyeing, and fermentation.[15] Thirteen of 15 responding purchasers reported that changes in demand for end use products has affected their demand for ammonium sulfate. Purchasers reported that changes in crop mix, nutrient requirements, imports of dry fertilizers, and more restrictions imposed on ammonium nitrate have increased demand for ammonium sulfate.

The cost share of ammonium sulfate is low compared to the final cost of end use products such as agricultural crops and certain industrial products. However, it is a higher cost share of intermediate products used in agricultural production such as fertilizer.

U.S. producers, importers, and purchasers reported widely different cost shares for ammonium sulfate in agricultural end uses, ranging from *** percent of agricultural crops to *** percent for fertilizers, with many responses in the range of *** percent to *** percent for fertilizer blends. Ammonium sulfate accounts for both a small (*** for wall board) and large (***) share of the cost of reported industrial end-use products.

Business cycles

Seven of eleven U.S. producers, 6 of 9 importers, and 17 of 21 purchasers indicated that the market was subject to business cycles. Specifically, most responding firms stated that ammonium sulfate is subject to seasonal (i.e., spring and fall) business cycles driven by fertilizing and crop cycles.

Two producers, three importers, and four purchasers reported that ammonium sulfate is subject to distinct conditions of competition. Producer *** stated that this is due to ammonium sulfate being a commodity product sold on price while producer *** reported that there has been a dramatic increase in imports. Importer *** cited ***. Importer *** stated that as a by-product, ammonium sulfate is subject to fluctuations in upstream markets, like mining. Purchaser *** stated that increased imports have come into the market.

[15] Fertilizer International, *Ammonium Sulphate Heads From East to West*, Dec. 2015, p. 20.

Four of six responding U.S. producers, two of five responding importers, and 10 of 20 responding purchasers indicated that there have been changes to the conditions of competition since 2013, citing ***. Purchaser *** stated that demand for ammonium sulfate fluctuates based on factors related to the agricultural economy (e.g. global supply, demand for grains, input prices) and other macroeconomic conditions (e.g. the relative strength of the U.S. dollar, geopolitics, trading conditions).

Demand trends

Most firms reported an increase in U.S. demand for ammonium sulfate since January 1, 2013 (table II-3). A plurality of responding purchasers (8 of 16) reported that demand for their final products using ammonium sulfate has increased. Petitioners stated that two main driving factors of increased demand are the Clean Air Act and the reduction of ammonium nitrate consumption.[16]

The majority of responding U.S. producers and purchasers reported that demand outside the United States increased, while all responding importers reported that it fluctuated.

Table II-3
Ammonium sulfate: Firms' responses regarding U.S. demand and demand outside the United States

Item	Increase	No change	Decrease	Fluctuate
Demand in the United States				
U.S. producers	6	0	1	5
Importers	4	0	1	1
Purchasers	14	1	2	4
Demand outside the United States				
U.S. producers	3	0	1	0
Importers	1	0	0	4
Purchasers	4	0	0	1
Demand for purchasers' final products				
Purchasers	8	3	1	4

Source: Compiled from data submitted in response to Commission questionnaires.

Substitute products

Nearly half of responding firms (5 of 10 U.S. producers, 4 of 8 importers, and 9 of 20 purchasers) indicated that there were substitutes for ammonium sulfate. Reported substitutes include ammonia thiosulfate, anhydrous ammonia, degradable sulfur, elemental sulfur, fertilizer blends, gypsum, and urea for uses in agriculture and fertilizers. Two responding producers (***), two importers (***), and four purchasers (***) reported that a change in the price of substitutes did not affect the price of ammonium sulfate, while two importers (***) and producer/purchaser *** reported that a change in price of the substitutes affects the price

[16] Hearing transcript, p. 102 (Mazzella Jr.).

of ammonium sulfate, as some substitutes compete on the value of nitrogen, though elemental sulfur has little effect on the price of ammonium sulfate.

SUBSTITUTABILITY ISSUES

The degree of substitution between domestic and imported ammonium sulfate depends upon such factors as relative prices, quality (e.g., grade standards, reliability of supply, defect rates, etc.), and conditions of sale (e.g., price discounts/rebates, lead times between order and delivery dates, payment terms, ammonium sulfate services, etc.). Based on available data, staff believes that there is moderate-to-high degree of substitutability between domestically produced ammonium sulfate and ammonium sulfate imported from China, primarily due to the importance of quality, availability, and granule size to purchasers.

Lead times

According to reporting U.S. producers and importers, ammonium sulfate is sold from inventory. U.S. producers and importers reported that *** percent and *** percent, respectively, of their commercial shipments came from inventories, with lead times ranging from 3 to 30 days for U.S. producers, and from a week to a month for importers. Importer *** indicated that its shipments ***.

Granule vs. standard size ammonium sulfate

U.S. producers and importers were asked to report their shipments by granule size: 0mm to 2mm, 2mm to 4mm, and 4mm or larger. U.S. producers' shipments of 2mm to 4mm granules accounted for *** to *** percent of U.S. producers' total U.S. shipments during 2013-15; shipments of granules 0mm to 2mm accounted for *** to *** percent. Shipments of 2mm to 4mm granules accounted for *** to *** percent of U.S. shipments of imports from China and *** to *** percent of U.S. shipments of imports from nonsubject countries during 2013-15. U.S. producers, importers, and purchasers were asked to assess the interchangeability between different granule sizes of ammonium sulfate. Responses were mixed from U.S. producers and importers, but purchasers reported that product in each size comparison is either "sometimes" or "never" interchangeable (table II-4). U.S. producer *** summarized what most responding firms identified as reasons for limited interchangeability. It stated that most ammonium sulfate with an average particle size of less than 2.0 mm in diameter (referred to as "standard grade") has limited interchangeability with granular product (particles > 2.0 mm) because standard grade cannot be readily blended with other types of granular fertilizer (like urea, potash, or phosphorous). It continued that standard grade is not ideally suited for use in the type of fertilizer distribution equipment that is most often employed in U.S. agriculture which spreads fertilizers over large distances. Domestic producers stated that the chemical analysis of

standard and granular ammonium sulfate is the same but that granular ammonium sulfate is more efficiently applied than standard grade.[17]

Most purchasers (14 of 21) reported that they never switch between granular and standard ammonium sulfate based on price.

Table II-4
Ammonium sulfate: Interchangeability between granular sizes of ammonium sulfate

Granular size pair	Number of U.S. producers reporting				Number of U.S. importers reporting				Number of purchasers reporting			
	A	F	S	N	A	F	S	N	A	F	S	N
0mm≤2mm vs. 2mm≤4mm	2	0	1	1	0	2	4	2	1	2	8	5
0mm≤2mm vs. ≥4mm	1	1	1	1	0	2	4	2	1	1	6	8
2mm≤4mm vs. ≥4mm	3	0	1	0	0	3	2	2	2	1	9	4

Note.--A=Always, F=Frequently, S=Sometimes, N=Never.

Source: Compiled from data submitted in response to Commission questionnaires.

Knowledge of country sources

Twenty-one purchasers indicated they had marketing/pricing knowledge of domestic product, 11 of Chinese product, 13 of Canadian product, and 5 of other nonsubject countries, including ***. As shown in table II-5, most purchasers always or usually make purchasing decisions based on the producer and country of origin, while their customers sometimes or never do. Six responding purchasers cited quality as the reason for at least sometimes making their purchasing decisions based on country of origin.

Table II-5
Ammonium sulfate: Purchasing decisions based on producer and country of origin

Purchaser/Customer Decision	Always	Usually	Sometimes	Never
Purchaser makes decision based on producer	6	6	4	5
Purchaser's customers make decision based on producer	2	6	5	6
Purchaser makes decision based on country	4	7	6	4
Purchaser's customers make decision based on country	1	6	6	6

Source: Compiled from data submitted in response to Commission questionnaires.

Factors affecting purchasing decisions

The most often cited top three factors firms consider in their purchasing decisions for ammonium sulfate were quality (18 firms), price (17 firms), and availability (11 firms), and reliability (5 firms) as shown in table II-6. Quality and price were the most frequently cited first-most important factor (cited by 6 firms), quality was the most frequently reported second-most important factor (9 firms); and price was the most frequently reported third-most important factor (6 firms).

[17] Hearing Transcript, p. 59 (Mazella Jr.), pp. 59-60 (Mazzella Sr.), pp. 60-61 (Hamilton).

Table II-6
Ammonium sulfate: Ranking of factors used in purchasing decisions as reported by U.S. purchasers, by factor

Factor	First	Second	Third	Total
Quality	6	9	3	18
Price	7	4	6	17
Availability/supply	3	4	4	11
Reliability	3	0	2	5
Other[1]	1	5	5	12

[1] Other factors include traditional supplier, service, contract terms, customer preference, location, uniform size, safety, smell, and supplier relationship.

Source: Compiled from data submitted in response to Commission questionnaires.

The majority of purchasers (18 of 21) reported that they "usually" (9 firms) or "sometimes" (9 firms) purchase the lowest-priced product.

When asked if they purchased ammonium sulfate from one source although a comparable product was available at a lower price from another source, 12 purchasers reported reasons including quality, timely delivery, supplier relationships, availability, logistical support, reliability, and supply consistency. *** stated that it values its relationship with certain suppliers and the quality of product above price in many cases, and that non-Chinese origin product is often preferred because the quality of Chinese origin ammonium sulfate is inferior compared to ammonium sulfate produced in other countries. Four of 17 responding purchasers reported that certain types of product were only available from a single source. *** stated that most domestically produced ammonium sulfate is granular sized while the ammonium sulfate produced elsewhere is standard sized. *** stated that most suppliers do not produce granular.

Importance of specified purchase factors

Purchasers were asked to rate the importance of 16 factors in their purchasing decisions (table II-7). The factors rated as very important by more than half of responding purchasers were availability, product consistency, reliability of supply (19 purchasers), price and quality meets industry standards (18 purchasers), delivery time (14 purchasers), delivery terms and U.S. transportation costs (11 purchasers). Granule size was very important for 10 of 20 purchasers and somewhat important for 10 purchasers. Most responding purchasers (15) reported that packaging was not an important factor.

Table II-7
Ammonium sulfate: Importance of purchase factors, as reported by U.S. purchasers, by factor

Factor	Very important	Somewhat important	Not important
Availability	19	2	0
Delivery terms	11	7	3
Delivery time	14	5	1
Discounts offered	9	10	2
Extension of credit	5	7	9
Granule size	10	10	1
Minimum quantity requirements	3	10	8
Packaging	1	5	15
Price	18	3	0
Product consistency	19	2	0
Product range	3	11	7
Quality meets industry standards	18	2	1
Quality exceeds industry standards	6	11	3
Reliability of supply	19	1	1
Technical support/service	3	8	10
U.S. transportation costs	11	8	2

Source: Compiled from data submitted in response to Commission questionnaires.

Supplier certification

Sixteen of 20 responding purchasers reported that their purchases of ammonium sulfate usually involve negotiations between the supplier and the purchaser. The factors that these firms generally negotiate include price (13 purchasers), availability/timing of shipment (6 purchasers), quantity and quality (7 purchasers), payment terms (4 purchasers), as wells as grade, warehousing, and freight rates.

Eight of 20 responding purchasers require their suppliers to become certified or qualified to sell ammonium to their firm. Purchasers reported that the time to qualify a new supplier varied; four purchasers can qualify a new supplier in 10 days or less. Three of 20 purchasers reported that a domestic or foreign supplier had failed in its attempt to qualify product, or had lost its approved status since 2013. *** stated that imports from China failed to certify because of odor. *** stated that ***. *** stated that firms failed to certify due to lack of information on the company or comfort level that they could perform.

Changes in purchasing patterns

Two purchasers reported that they purchase ammonium sulfate daily, eight purchase weekly, six purchase monthly, four purchase quarterly, and two purchase annually.[18] Purchaser *** reported purchasing seasonally, and purchasers *** reported purchasing as needed. Most purchasers (16 of 21) reported that their purchasing frequency had not changed since 2013.

[18] Several purchasers reported purchasing at multiple frequencies.

Four purchasers stated that they had increased the frequency of purchases due to increased demand. Most (13 of 20) purchasers contact one to three suppliers before making a purchase.

Purchasers were asked about changes in their purchasing patterns from different sources since 2013 (table II-8). Purchasers decreased purchases from the United States because of limited availability, imports from China, more direct sales to retailers, failure to follow lower market trends, and timing of shipments. Purchasers increased purchases from the United States due to market conditions and pricing dynamics, consistent supply, business growth, and quality. Purchasers increased purchases of ammonium sulfate from China due to availability and price.

Table II-8
Ammonium sulfate: Changes in purchase patterns from U.S., subject, and nonsubject countries

Source of purchases	Did not purchase	Decreased	Increased	Constant	Fluctuated
United States	1	4	6	6	5
China	7	0	8	1	2
All other sources	9	1	1	0	2
Sources unknown	6	0	1	0	4

Source: Compiled from data submitted in response to Commission questionnaires.

Six of 20 responding purchasers reported that they had changed suppliers since January 1, 2013. Specifically, *** reduced purchases from DSM/Fibrant because it ceased production. Firms added or increased purchases from IOC and Gavilon. *** stated that it has gone from about 8 suppliers to 25 suppliers. Firms also reported changes because of mill/vendor consolidation.

Importance of purchasing domestic product

Most responding purchasers (15 of 19) reported that purchasing U.S.-produced ammonium sulfate was not an important factor in their purchasing decisions. Nine purchasers reported that purchasing domestic product was required by their customers (for 10 to 100 percent of their purchases) and three purchasers reported other preferences for domestic product, including highest quality product and required standard grade. None reported that domestic product was required by law.

Comparisons of domestic products, subject imports, and nonsubject imports

Purchasers were asked a number of questions comparing ammonium sulfate produced in the United States, subject countries, and nonsubject countries. First, purchasers were asked for a country-by-country comparison on the same 16 factors (table II-9) for which they were asked to rate the importance. The majority of responding purchasers rated domestically produced ammonium sulfate as superior to imports of ammonium sulfate from China with respect to product consistency, quality exceeds industry standards, availability, delivery time, reliability of supply, quality meets industry standards, and technical support/service and comparable with respect to U.S. transportation costs, discounts offered, and extension of credit. Most responding purchasers reported that U.S. and nonsubject product were comparable on all 16 factors.

Table II-9
Ammonium sulfate: Purchasers' comparisons between U.S.-produced and imported product

Factor	U.S. vs. China			U.S. vs. Canada			China vs. Canada		
	S	C	I	S	C	I	S	C	I
Availability	10	7	1	4	8	1	0	6	5
Delivery terms	9	8	1	2	10	0	1	6	4
Delivery time	10	7	0	2	10	0	1	6	4
Discounts offered	3	10	4	1	11	0	3	6	1
Extension of credit	6	11	0	1	10	0	0	8	2
Granule size	9	8	1	1	11	0	0	4	7
Minimum quantity requirements	9	8	0	3	9	0	0	4	6
Packaging	6	9	0	1	8	1	0	6	3
Price[1]	1	6	10	1	12	0	5	3	2
Product consistency	13	5	0	3	10	0	1	3	7
Product range	8	9	1	2	11	0	0	7	3
Quality meets industry standards	10	7	0	2	11	0	0	7	4
Quality exceeds industry standards	11	5	0	3	9	0	0	5	6
Reliability of supply	10	7	1	1	12	0	0	6	5
Technical support/service	10	7	1	1	10	1	0	5	6
U.S. transportation costs[1]	3	13	1	1	11	0	1	8	1

Factor	U.S. vs. nonsubject			China vs. nonsubject		
	S	C	I	S	C	I
Availability	3	5	0	1	3	2
Delivery terms	3	4	0	0	4	2
Delivery time	4	4	0	0	4	2
Discounts offered	1	5	1	2	3	0
Extension of credit	2	5	0	0	4	1
Granule size	4	4	0	0	3	3
Minimum quantity requirements	4	3	0	0	3	1
Packaging	2	4	0	0	3	1
Price[1]	3	4	1	3	2	1
Product consistency	4	4	0	0	3	3
Product range	2	5	0	0	3	3
Quality meets industry standards	5	3	0	0	4	2
Quality exceeds industry standards	4	3	0	0	3	3
Reliability of supply	4	4	0	1	3	2
Technical support/service	5	3	0	0	4	2
U.S. transportation costs[1]	2	5	0	0	5	0

[1] A rating of superior means that price/U.S. transportation cost is generally lower. For example, if a firm reported "U.S. superior," it meant that the U.S. product was generally priced lower than the imported product.

Note.--S=first listed country's product is superior; C=both countries' products are comparable; I=first listed country's product is inferior.

Source: Compiled from data submitted in response to Commission questionnaires.

Comparison of U.S.-produced and imported ammonium sulfate

In order to determine whether U.S.-produced ammonium sulfate can generally be used in the same applications as imports from China, U.S. producers, importers, and purchasers were asked whether the products can "always," "frequently," "sometimes," or "never" be used

interchangeably. As shown in table II-10, all responding producers, half of responding importers, and 10 of 17 purchasers reported that domestically produced ammonium sulfate and ammonium sulfate imported from China are “always” or “frequently” interchangeable.

Table II-10
Ammonium sulfate: Interchangeability between ammonium sulfate produced in the United States and in other countries, by country pair

Country pair	Number of U.S. producers reporting				Number of U.S. importers reporting				Number of purchasers reporting			
	A	F	S	N	A	F	S	N	A	F	S	N
U.S. vs. subject countries:												
U.S. vs. China	5	1	0	0	2	2	3	1	2	8	6	1
U.S. vs. Canada	5	1	0	0	3	2	0	0	2	9	2	2
Subject countries comparisons:												
China vs. Canada	5	1	0	0	2	0	2	0	2	4	2	1
Nonsubject countries comparisons:												
U.S. vs. nonsubject	5	1	0	0	2	2	0	0	2	4	3	1
China vs. nonsubject	4	1	0	0	1	1	2	0	1	3	2	1
Canada vs. nonsubject	5	1	0	0	2	2	0	0	2	4	1	2

Note.--A=Always, F=Frequently, S=Sometimes, N=Never.

Source: Compiled from data submitted in response to Commission questionnaires.

The most often cited reasons ammonium sulfate may not be interchangeable were quality and size. U.S. producer *** stated that product quality and size limit interchangeability. Importer *** reported that U.S.-produced ammonium sulfate is *** interchangeable with Chinese-produced ammonium sulfate due to ***. Importer *** stated that that ammonium sulfate from the United States and China is *** interchangeable because the Chinese product ***. Importer *** stated that quality (or at least perceived quality) prevents interchangeability of ammonium sulfate imported from China. Importer *** stated that because granular ammonium sulfate produced in China is generally lower quality, some purchasers will not accept it for blending. Importer *** stated that interchangeability depends on the end use and the Chinese granular product is usually compacted, so it can be less hard. Purchaser *** stated that interchangeability depends on the size of the product required and that Chinese product sometimes is interchangeable based on consumer demand, but is limited by Chinese product’s inferior quality. Purchaser *** stated that if quality and pricing is similar, then the product is sometimes interchangeable (based on the terms of the purchase) but if the quality of the product is not the same, then it is never interchangeable. Purchaser *** stated that Canada has to have extremely uniform product to run through application equipment as well as that there is always resistance when a new country of origin is introduced into the U.S. market, including product from Belarus, Lithuania, Spain, and the Netherlands.

Purchasers were asked to describe the characteristics they consider when determining the quality of ammonium sulfate. Purchasers consistently reported consistent and uniform granule size and appearance, dustiness, free flowing or flowability, as well as low odor, hard or soft consistency, storability, solubility, blending and application quality, and impurities. As can

be seen from table II-11, 15 of 20 responding purchasers reported that domestically produced product "usually" met minimum quality specifications, and 8 reported that it "always" did.[19] Eight of 20 responding purchasers reported that the Chinese ammonium sulfate "sometimes" met minimum quality specifications.

Table II-11
Ammonium sulfate: Ability to meet minimum quality specifications, by source[1]

Source	Always	Usually	Sometimes	Rarely or never
United States	8	15	0	0
China	1	4	8	2
Other	2	5	4	0

[1] Purchasers were asked how often domestically produced or imported ammonium sulfate meets minimum quality specifications for their own or their customers' uses.

Source: Compiled from data submitted in response to Commission questionnaires.

In addition, producers, importers, and purchasers were asked to assess how often differences other than price were significant in sales of ammonium sulfate from the United States, China, or nonsubject countries. As seen in table II-12, most responding U.S. producers indicated that factors other than price were "never" significant for all country pairs. Most importers indicated that factors other than price were "always" or "sometimes" significant in sales of ammonium sulfate when compared to product imported from China, and "sometimes" or "never" when compared to product imported from Canada. Half of responding purchasers reported that factors other than price were "always" or "frequently" significant in their purchases of ammonium sulfate from the United States when compared to product imported from China, and half reported "sometimes" or "never." In comparing domestic product and that imported from Canada, a majority of purchasers reported that differences other than price were "sometimes" or "never" significant.

[19] Purchasers *** reported that the product from United States "always" or "usually" met minimum quality specifications.

Table II-12
Ammonium sulfate: Significance of differences other than price between ammonium sulfate produced in the United States and in other countries, by country pair

Country pair	Number of U.S. producers reporting				Number of U.S. importers reporting				Number of purchasers reporting			
	A	F	S	N	A	F	S	N	A	F	S	N
U.S. vs. subject countries:												
U.S. vs. China	0	0	1	5	3	1	2	1	5	3	5	3
U.S. vs. Canada	0	0	0	6	1	0	2	2	1	2	4	6
Subject countries comparisons:												
China vs. Canada	0	0	1	5	1	1	1	1	2	2	2	4
Nonsubject countries comparisons:												
U.S. vs. nonsubject	0	0	2	4	1	0	2	1	2	2	2	2
China vs. nonsubject	0	0	1	4	1	1	1	0	0	2	2	2
Canada vs. nonsubject	0	0	1	5	1	0	1	1	0	2	3	4

Note.--A = Always, F = Frequently, S = Sometimes, N = Never.

Source: Compiled from data submitted in response to Commission questionnaires.

Importers and purchasers reported factors other than price that mirrored responses to limitations on interchangeability: quality, size, and availability. Importer *** stated that the ammonium sulfate it buys from China is much better for blending because it is not hydroscopic like U.S. product. It continued that the U.S. product cannot be used as a replacement for ammonium nitrate because of granule size and absorption speed while the product it buys from China can be used as a replacement for ammonium nitrate and is safer to handle. Importer *** stated that sizing, quality, and consistency are all relevant factors. Importer *** stated that quality (including hardness, dustiness, and flowability), availability, and transportation network will always have an impact on the sale of these products, regardless of the country pair. It continued that sales of ammonium sulfate are very sensitive to freight cost and distance.

ELASTICITY ESTIMATES

This section discusses elasticity estimates; parties were encouraged to comment on these estimates. No party has commented on these estimates.

U.S. supply elasticity

The domestic supply elasticity[20] for ammonium sulfate measures the sensitivity of the quantity supplied by U.S. producers to changes in the U.S. market price of ammonium sulfate. The elasticity of domestic supply depends on several factors including the level of excess capacity, the ease with which producers can alter capacity, producers' ability to shift to production of other products, the existence of inventories, and the availability of alternate

[20] A supply function is not defined in the case of a non-competitive market.

markets for U.S.-produced ammonium sulfate. Analysis of these factors above indicates that the U.S. industry has the ability to considerably increase or decrease shipments to the U.S. market; an estimate in the range of 4 to 6 is suggested.

U.S. demand elasticity

The U.S. demand elasticity for ammonium sulfate measures the sensitivity of the overall quantity demanded to a change in the U.S. market price of ammonium sulfate. This estimate depends on factors discussed above such as the existence, availability, and commercial viability of substitute products, as well as the component share of the ammonium sulfate in the production of any downstream products. Based on the available information, the aggregate demand for ammonium sulfate is likely to be inelastic; a range of -0.25 to -0.75 is suggested.

Substitution elasticity

The elasticity of substitution depends upon the extent of product differentiation between the domestic and imported products.[21] Product differentiation, in turn, depends upon such factors as quality (e.g., chemistry, consistency, etc.) and conditions of sale (e.g., availability, sales terms/discounts/promotions, etc.). Based on available information, the elasticity of substitution between U.S.-produced ammonium sulfate and imported ammonium sulfate is likely to be in the range of 3 to 5.

[21] The substitution elasticity measures the responsiveness of the relative U.S. consumption levels of the subject imports and the domestic like products to changes in their relative prices. This reflects how easily purchasers switch from the U.S. product to the subject products (or vice versa) when prices change.

PART III: U.S. PRODUCERS' PRODUCTION, SHIPMENTS, AND EMPLOYMENT

The Commission analyzes a number of factors in making injury determinations (see 19 U.S.C. §§ 1677(7)(B) and 1677(7)(C)). Information on the subsidies and dumping margins was presented in *Part I* of this report and information on the volume and pricing of imports of the subject merchandise is presented in *Part IV* and *Part V*. Information on the other factors specified is presented in this section and/or *Part VI* and (except as noted) is based on the questionnaire responses of 11 firms that accounted for the vast majority of U.S. production of ammonium sulfate during 2015.[1]

U.S. PRODUCERS

The Commission issued a U.S. producer questionnaire to 21 firms based on information contained in the petition. Eleven firms provided usable data on their production operations.[2] Staff believes that these responses represent the vast majority of U.S. production of ammonium sulfate in 2015.

Table III-1 lists U.S. producers of ammonium sulfate, their production locations, positions on the petition, and shares of total U.S. production.

[1] This estimate is derived from ***. Reported U.S. production of ammonium sulfate based on questionnaire responses was 3,317,859 short tons in 2015.

[2] *** firms provided certification that they have not produced ammonium sulfate in the U.S. since January 1, 2013: ***.

Table III-1
Ammonium sulfate: U.S. producers, their position on the petition, location of production, and share of reported U.S. production, 2015

Firm	Position on petition	Production location(s)	Share of U.S. production (percent)
ABC Coke, A Division of Drummond Company, Inc.	***	Tarrant, AL	***
AdvanSix	***	Hopewell, VA	***
ArcelorMittal USA	***	Burns Harbor, IN	***
ADM	***	Decatur, IL	***
BASF	***	Freeport, TX	***
Dakota	***	Beulah, ND	***
GAC	***	Searsport, ME	***
JR Simplot	***	Pocatello, ID Lathrop, CA	***
Mountain State Carbon, LLC	***	Follansbee, WV	***
PCI	Support	Pasadena, TX	***
Vertellus	***	Delaware Water Gap, PA	***
Total			***

Source: Compiled from data submitted in response to Commission questionnaires.

Table III-2 presents information on U.S. producers' ownership, related and/or affiliated firms, and share of total U.S. production of ammonium sulfate. No producers identified a related affiliation or ownership relationship with Chinese firms. As discussed in greater detail below, no U.S. producers reported direct imports of the subject merchandise[3] and one producer, *** reported purchases of subject ammonium sulfate.

Table III-2
Ammonium sulfate: U.S. producers' ownership, related and/or affiliated firms, since January 2013

* * * * * * *

Changes in operations

Producers were asked to report any changes in operations since January 1, 2013. Five domestic producers reported changes in their operations related to the production of ammonium sulfate. Such changes are presented in table III-3. No plant openings, plant closings, consolidations, or relocations were reported.

[3] ***.

Table III-3
Ammonium sulfate: U.S. producers' reported changes in operations, since January 1, 2013

* * * * * * *

U.S. PRODUCTION, CAPACITY, AND CAPACITY UTILIZATION

Table III-4 and figure III-1 present U.S. producers' ammonium sulfate production, capacity, and capacity utilization.[4] [5] Domestic producers' capacity increased by 3.8 percent from 2013 to 2015 while production decreased by 4.0 percent from 2013 to 2015. Domestic producers' capacity was roughly similar between the interim periods of 2015 and 2016, while production was 2.9 percent higher in January-September 2016 than in January-September 2015. Capacity utilization declined by 6.7 percentage points from 2013 to 2015 but was 2.4 percentage points higher in January-September 2016 than during the same period in 2015. No producer reported out of scope production on the same machinery used to make ammonium sulfate.

***.[6]

AdvanSix has a process to produce ammonium sulfate and caprolactam as co-products. ***.[7]

[4] As described in Part I, most producers indicated that the end uses of their ammonium sulfate are primarily for agricultural or fertilizer uses. Ammonium sulfate production referenced in this report refers almost entirely to agricultural uses.

[5] PCI produces ammonium sulfate directly, and not as a by-product or co-product. Hearing transcript, p. 18 (Mazzella, Sr.). Leading producers use different processes: AdvanSix and *** indicated they produce ammonium sulfate as a coproduct of caprolactam, while ***.

[6] *** producer questionnaire response, at question II-3c & II-3d.

[7] *** producer questionnaire response, at question II-2.

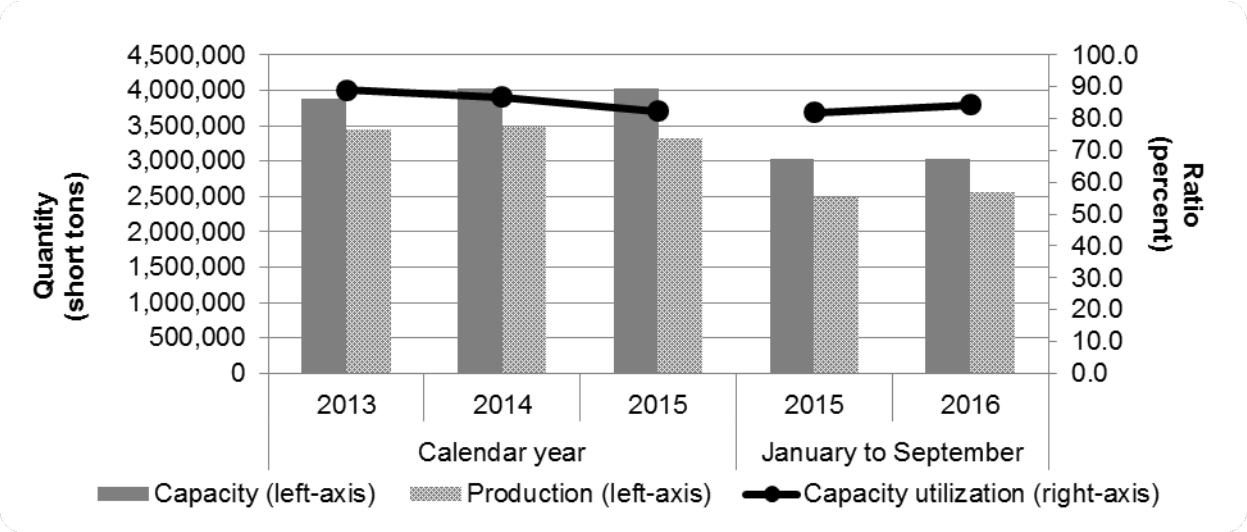
Table III-4
Ammonium sulfate: U.S. producers' capacity, production, and capacity utilization, 2013-15, January-September 2015, and January-September 2016

Item	Calendar year			January to September	
	2013	2014	2015	2015	2016
	Capacity (short tons)				
ABC Coke	***	***	***	***	***
AdvanSix	***	***	***	***	***
ArcelorMittal	***	***	***	***	***
ADM	***	***	***	***	***
BASF	***	***	***	***	***
Dakota	***	***	***	***	***
GAC	***	***	***	***	***
JR Simplot	***	***	***	***	***
Mountain State	***	***	***	***	***
PCI	***	***	***	***	***
Vertellus	***	***	***	***	***
Total capacity	3,880,320	4,023,610	4,026,948	3,024,177	3,025,962
	Production (short tons)				
ABC Coke	***	***	***	***	***
AdvanSix	***	***	***	***	***
ArcelorMittal	***	***	***	***	***
ADM	***	***	***	***	***
BASF	***	***	***	***	***
Dakota	***	***	***	***	***
GAC	***	***	***	***	***
JR Simplot	***	***	***	***	***
Mountain State	***	***	***	***	***
PCI	***	***	***	***	***
Vertellus	***	***	***	***	***
Total production	3,456,177	3,491,117	3,317,859	2,480,347	2,553,295
	Capacity utilization (percent)				
ABC Coke	***	***	***	***	***
AdvanSix	***	***	***	***	***
ArcelorMittal	***	***	***	***	***
ADM	***	***	***	***	***
BASF	***	***	***	***	***
Dakota	***	***	***	***	***
GAC	***	***	***	***	***
JR Simplot	***	***	***	***	***
Mountain State	***	***	***	***	***
PCI	***	***	***	***	***
Vertellus	***	***	***	***	***
Average capacity utilization	89.1	86.8	82.4	82.0	84.4

Source: Compiled from data submitted in response to Commission questionnaires.

Figure III-1

Ammonium sulfate: U.S. producers' capacity, production, and capacity utilization, 2013-15, January to September 2015, and January to September 2016



Source: Compiled from data submitted in response to Commission questionnaires.

U.S. PRODUCERS' U.S. SHIPMENTS AND EXPORTS

Table III-5 presents U.S. producers' U.S. shipments, export shipments, and total shipments. Domestic producers' U.S. shipments increased by *** percent from 2013 to 2015, while their exports decreased by *** percent from 2013 to 2015. Domestic producers' U.S. shipments were *** percent lower during the interim period of 2016 than during the interim period of 2015, while exports were *** percent higher during the interim period of 2016 than during the interim period of 2015.

The average unit values of U.S. shipments decreased by *** percent from 2013 to 2015 while the average unit values of export shipments decreased by *** percent in the same period. The average unit values of U.S. shipments were *** percent lower during the interim period of 2016 than during the interim period of 2015, while average unit values of exports were *** percent lower during the interim period of 2016 than during the interim period of 2015.[8]

***.

[8] The Petitioner's calculated values for domestic producers' commercial sales ***. Petitioner's prehearing brief, p. 26. (Net tons and short tons are equivalent.)

Table III-5
Ammonium sulfate: U.S. producers' U.S. shipments, export shipments, and total shipments, 2013-15, January-September 2015, and January-September 2016

Item	Calendar year			January to September	
	2013	2014	2015	2015	2016
	Quantity (short tons)				
Commercial U.S. shipments	2,152,740	2,114,110	2,007,471	1,652,153	1,523,626
Internal consumption	***	***	***	***	***
Transfers to related firms	***	***	***	***	***
Subtotal, U.S. shipments	***	***	***	***	***
Export shipments	***	***	***	***	***
Total shipments	3,297,579	3,645,075	3,257,852	2,474,287	2,448,156
	Value (1,000 dollars)				
Commercial U.S. shipments	464,458	423,835	426,469	361,328	298,599
Internal consumption	***	***	***	***	***
Transfers to related firms	***	***	***	***	***
Subtotal, U.S. shipments	***	***	***	***	***
Export shipments	***	***	***	***	***
Total shipments	683,562	634,289	600,711	476,086	410,489
	Unit value (dollars per short ton)				
Commercial U.S. shipments	216	200	212	219	196
Internal consumption	***	***	***	***	***
Transfers to related firms	***	***	***	***	***
Subtotal, U.S. shipments	***	***	***	***	***
Export shipments	***	***	***	***	***
Total shipments	207	174	184	192	168
	Share of quantity (percent)				
Commercial U.S. shipments	65.3	58.0	61.6	66.8	62.2
Internal consumption	***	***	***	***	***
Transfers to related firms	***	***	***	***	***
Subtotal, U.S. shipments	***	***	***	***	***
Export shipments	***	***	***	***	***
Total shipments	100.0	100.0	100.0	100.0	100.0
	Share of value (percent)				
Commercial U.S. shipments	67.9	66.8	71.0	75.9	72.7
Internal consumption	***	***	***	***	***
Transfers to related firms	***	***	***	***	***
Subtotal, U.S. shipments	***	***	***	***	***
Export shipments	***	***	***	***	***
Total shipments	100.0	100.0	100.0	100.0	100.0

Source: Compiled from data submitted in response to Commission questionnaires.

U.S. Shipments by Granule Size

Table III-6 presents U.S. producers' U.S. shipments of ammonium sulfate by granule size. Most U.S. producers' U.S. shipments of subject product over the POI were medium granules (i.e. 2 mm to 4 mm). As a share of total quantity, U.S. shipments of this size increased by *** percentage points from 2013 to 2015, while U.S. shipments of small granule sizes (i.e. 0 mm to 2 mm) decreased by *** percentage points over the same period.

Table III-6

Ammonium sulfate: U.S. producers' U.S. shipments by granule size, 2013-15, January-September 2015, and January-September 2016

* * * * * * *

U.S. PRODUCERS' INVENTORIES

Table III-7 presents U.S. producers' end-of-period inventories and the ratio of these inventories to U.S. producers' production, U.S. shipments, and total shipments**.** Domestic producers' inventories decreased by 25.9 percent from 2013 to 2015. Inventories were 50.6 percent higher during the interim period of 2016 than during the interim period of 2015.

Table III-7

Ammonium sulfate: U.S. producers' inventories, 2013-15, January-September 2015, and January-September 2016

Item	Calendar year			January to September	
	2013	2014	2015	2015	2016
	Quantity (short tons)				
U.S. producers' end-of-period inventories	422,981	242,921	313,336	272,053	409,589
	Ratio (percent)				
Ratio of inventories to.--					
U.S. production	12.2	7.0	9.4	8.2	12.0
U.S. shipments	***	***	***	***	***
Total shipments	12.8	6.7	9.6	8.2	12.5

Source: Compiled from data submitted in response to Commission questionnaires.

U.S. PRODUCERS' IMPORTS AND PURCHASES

No U.S. producer reported imports of ammonium sulfate, while three producers reported purchases. ***.[9] ***.[10]
***.[11]

U.S. EMPLOYMENT, WAGES, AND PRODUCTIVITY

Table III-8 shows U.S. producers' employment-related data. From 2013 to 2015 the number of production and related workers ("PRWs") in the domestic industry increased by 2.8 percent. The number of PRWs in the interim period of 2016 was 0.9 percent lower compared to the interim period of 2015 (a reduction of 6 PRWs). Hourly wages rose 3.9 percent from 2013 to 2015. The United Steel, Paper, Forestry, Rubber, Manufacturing, Energy, Allied Industrial and Service Workers International Union ("USW") represents workers at PCI, AdvanSix, and JR Simplot.[12]

Table III-8
Ammonium sulfate: U.S. producers' employment related data, 2013-15, January-September 2015, and January-September 2016

Item	Calendar year			January to September	
	2013	2014	2015	2015	2016
Production and related workers (PRWs) (number)	633	647	651	654	648
Total hours worked (1,000 hours)	1,443	1,572	1,542	7,093	1,205
Hours worked per PRW (hours)	2,280	2,430	2,369	10,846	1,860
Wages paid ($1,000)	53,037	57,907	58,850	43,828	46,654
Hourly wages (dollars per hour)	$36.75	$36.84	$38.16	$6.18	$38.72
Productivity (short tons per hour)	2.4	2.2	2.2	0.3	2.1
Unit labor costs (dollars per short tons)	$15.35	$16.59	$17.74	$17.67	$18.27

Source: Compiled from data submitted in response to Commission questionnaires.

[9] *** producer questionnaire response, at question II-12.
[10] *** producer questionnaire response, at question II-12.
[11] ***.
[12] Hearing transcript, p. 39 (Houseman).

PART IV: U.S. IMPORTS, APPARENT U.S. CONSUMPTION,

AND MARKET SHARES

U.S. IMPORTERS

The Commission issued importer questionnaires to 18 firms believed to be importers of subject ammonium sulfate, as well as to all U.S. producers of ammonium sulfate.[1] Usable questionnaire responses were received from nine companies,[2] representing 94.4 percent of U.S. imports from China in 2015 under HTS subheading 3102.21.00. Table IV-1 lists all responding U.S. importers of ammonium sulfate, their locations, and their shares of U.S. imports, in 2015.

Table IV-1
Ammonium sulfate: U.S. importers, their headquarters, and share of total imports by source, 2015

Firm	Headquarters	Share of imports by source (percent)		
		China	All other sources	Total imports
Agrium Inc.	Calgary, AB	***	***	***
Gavilon Fertilizer, LLC	Savannah, GA	***	***	***
International Raw Materials Ltd	Philadelphia, PA	***	***	***
JM Fertilizer LLC	Tampa, FL	***	***	***
Nitron Group Corporation	Greenwich, CT	***	***	***
Oakley Fertilizer	North Little Rock, AR	***	***	***
Pan American Grain Company Inc.	Guaynabo, PR	***	***	***
Trammo, Inc.	New York, NY	***	***	***
Two Rivers Terminal, LLC	Pasco, WA	***	***	***
Total		***	***	***

Source: Compiled from data submitted in response to Commission questionnaires.

[1] The Commission issued questionnaires to those firms identified in the petition, along with firms that, based on a review of data provided by U.S. Customs and Border Protection, may have accounted for more than one percent of total imports under HTS subheading 3102.21.00 in 2015.

[2] *** provided certification that they have not imported ammonium sulfate into the U.S. since January 1, 2013. ***.

U.S. IMPORTS

Table IV-2 and figure IV-1 present data for U.S. imports of ammonium sulfate from China and all other sources. Imports of ammonium sulfate from China increased overall by 682.4 percent from 2013 to 2015, but were 49.7 percent lower in the interim period of 2016 than in the interim period of 2015. As a share of total imports, subject imports from China increased from 14.3 percent in 2013 to 61.5 percent in 2015. Subject imports accounted for 61.5 percent of total imports in the interim period of 2015 and 39.4 percent of total U.S. imports in the interim period of 2016. The average unit values of subject imports decreased by 15.1 percent from 2013 to 2015, and were 10.8 percent lower in the interim period of 2016 compared to the interim period of 2015.

Canada was the largest nonsubject source for U.S. imports of ammonium sulfate in 2015. It accounted for 33.6 percent by quantity of total U.S. imports of ammonium sulfate, a decrease of 50.1 percentage points from its 2013 share of 83.7 percent. U.S. imports from all nonsubject countries combined decreased by 18.2 percent from 2013 to 2015, but were 23.6 percent higher during the interim period of 2016 compared to the interim period of 2015. The average unit values of nonsubject imports decreased by 31.6 percent from 2013 to 2015, but were 4.7 percent higher during the interim period of 2016 compared with the interim period of 2015.

Table IV-2
Ammonium sulfate: U.S. imports, by source, 2013-15, January-September 2015, and January-September 2016

Item	Calendar year			January to September	
	2013	2014	2015	2015	2016
	Quantity (short tons)				
U.S. imports from.--					
China	47,236	229,000	369,570	303,464	152,503
Canada	276,465	277,523	201,897	161,199	152,934
All other sources	6,751	1,905	29,738	28,593	81,648
Subtotal, nonsubject sources	283,216	279,428	231,635	189,792	234,582
Total U.S. imports	330,452	508,428	601,205	493,256	387,084
	Value (1,000 dollars)				
U.S. imports from.--					
China	10,277	60,221	68,251	56,187	25,140
Canada	78,587	66,848	38,251	29,892	32,735
All other sources	2,252	875	6,924	6,491	14,432
Subtotal, nonsubject sources	80,840	67,723	45,175	36,383	47,166
Total U.S. imports	91,117	127,944	113,426	92,570	72,306
	Unit value (dollars per short ton)				
U.S. imports from.--					
China	218	263	185	185	165
Canada	284	241	189	185	214
All other sources	334	459	233	227	177
Subtotal, nonsubject sources	285	242	195	192	201
Total U.S. imports	276	252	189	188	187

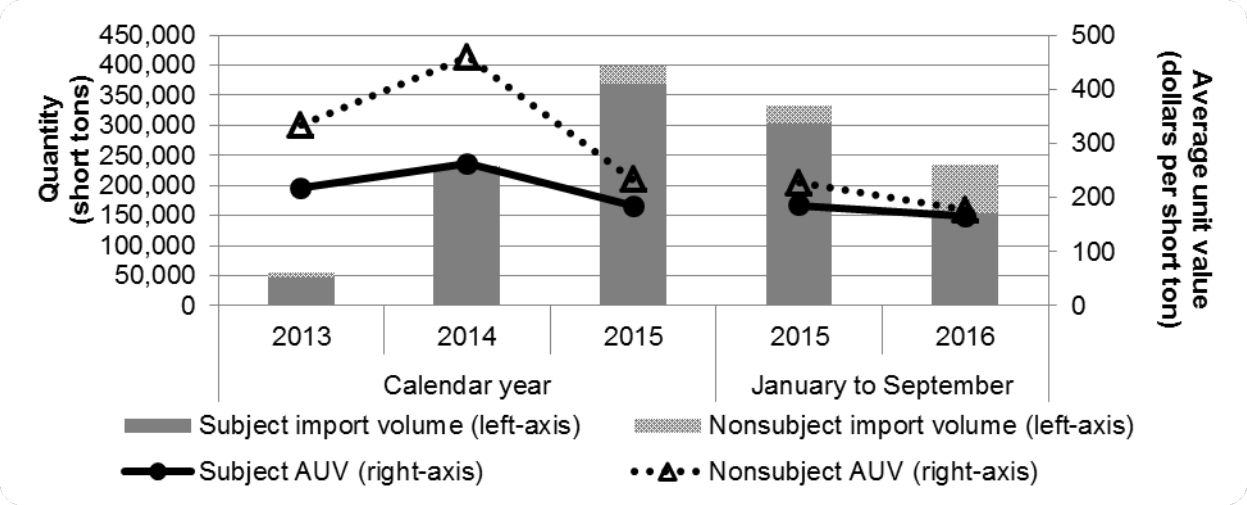
Table continued on next page.

Table IV-2—Continued
Ammonium sulfate: U.S. imports, by source, 2013-15, January-September 2015, and January-September 2016

Item	Calendar year			January to September	
	2013	2014	2015	2015	2016
	Share of quantity (percent)				
U.S. imports from.--					
China	14.3	45.0	61.5	61.5	39.4
Canada	83.7	54.6	33.6	32.7	39.5
All other sources	2.0	0.4	4.9	5.8	21.1
Subtotal, nonsubject sources	85.7	55.0	38.5	38.5	60.6
Total U.S. imports	100.0	100.0	100.0	100.0	100.0
	Share of value (percent)				
U.S. imports from.--					
China	11.3	47.1	60.2	60.7	34.8
Canada	86.2	52.2	33.7	32.3	45.3
All other sources	2.5	0.7	6.1	7.0	20.0
Subtotal, nonsubject sources	88.7	52.9	39.8	39.3	65.2
Total U.S. imports	100.0	100.0	100.0	100.0	100.0
	Ratio to U.S. production				
U.S. imports from.--					
China	1.4	6.6	11.1	12.2	6.0
Canada	8.0	7.9	6.1	6.5	6.0
All other sources	0.2	0.1	0.9	1.2	3.2
Subtotal, nonsubject sources	8.2	8.0	7.0	7.7	9.2
Total U.S. imports	9.6	14.6	18.1	19.9	15.2

Source: Compiled from official import statistics, using HTS statistical reporting number 3102.21.0000, accessed November 7, 2016.

Figure IV-1
Ammonium sulfate: U.S. import volumes and prices, 2013-15, January-September 2015, and January-September 2016



Source: Compiled from official import statistics, using HTS statistical reporting number 3102.21.0000, accessed November 7, 2016.

Table IV-3 presents monthly imports from China and all other sources from January 2013 through September 2016.

Table IV-3

Ammonium sulfate: Monthly U.S. imports, by source, 2013-15 and January-September 2016

Item	Calendar year			
	2013	2014	2015	2016
	Quantity (short tons)			
U.S. imports from China.--				
January	1,226	132	0	50,367
February	413	39,039	15,713	33,059
March	30,284	40,773	79,196	68,642
April	2,802	22,046	29,450	88
May	608	0	55,997	72
June	24	33,530	7	24
July	386	20	11,023	190
August	1,587	524	55	24
September	773	11,524	112,022	36
October	8,825	21	5,478	0
November	22	47,938	60,627	0
December	285	33,452	0	0
Total	47,236	229,000	369,570	152,503
U.S. imports from Canada.--				
January	24,483	30,058	19,624	16,192
February	37,535	25,931	29,488	13,923
March	29,908	25,934	33,187	20,750
April	39,768	33,234	20,687	32,167
May	27,732	40,598	9,021	16,960
June	9,442	16,392	7,131	17,844
July	17,257	21,560	10,987	11,626
August	11,044	17,236	11,741	7,315
September	20,948	20,136	19,332	16,157
October	23,835	17,099	11,213	0
November	13,669	12,947	10,585	0
December	20,844	16,399	18,900	0
Total	276,465	277,523	201,897	152,934

Table continued on next page.

Table IV-3—Continued

Ammonium sulfate: Monthly U.S. imports, by source, 2013-15 and January-September 2016

Item	Calendar year			
	2013	2014	2015	2016
U.S. imports from all other sources.--				
January	411	46	67	22,097
February	132	117	117	419
March	278	23	411	194
April	240	214	822	1,041
May	4,189	2	1,821	1,285
June	383	66	1,723	968
July	164	12	1,294	940
August	588	122	5,732	23,768
September	49	104	16,605	30,936
October	173	72	414	0
November	3	868	510	0
December	141	259	220	0
Total	6,751	1,905	29,738	81,648

Source: Compiled from official import statistics, using HTS statistical reporting number 3102.21.0000, accessed November 7, 2016.

U.S. Import Shipments by Granule Size

Tables IV-4 and IV-5 present U.S. shipments of subject imports of ammonium sulfate from China and all other sources by granule size. The vast majority of U.S. shipments of subject imports from China over the POI were medium-sized granules (2 mm to 4 mm). U.S. shipments of subject imports in these sizes varied between *** percent and *** percent over the POI.

*** percent of U.S. shipments of subject imports from all other sources were medium-sized granules (2 mm to 4 mm) in 2015, while *** percent of U.S. shipments of subject imports from all other sources were small-sized granules (0 mm to 2 mm). The share of U.S. shipments of subject imports from all other sources that was medium-sized granule ammonium sulfate declined by *** percentage points from 2013, while the share that was small-sized granule ammonium sulfate increased by *** percentage points.

Table IV-4

Ammonium sulfate: U.S. shipments of imports from China by granule size, 2013-15, January-September 2015, and January-September 2016

* * * * * * *

Table IV-5

Ammonium sulfate: U.S. shipments of imports from all other sources by granule size, 2013-15, January-September 2015, and January-September 2016

* * * * * * *

NEGLIGIBILITY

The statute requires that an investigation be terminated without an injury determination if imports of the subject merchandise are found to be negligible.[3] Negligible imports are generally defined in the Tariff Act of 1930, as amended, as imports from a country of merchandise corresponding to a domestic like product where such imports account for less than 3 percent of the volume of all such merchandise imported into the United States in the most recent 12-month period for which data are available that precedes the filing of the petition or the initiation of the investigation. However, if there are imports of such merchandise from a number of countries subject to investigations initiated on the same day that individually account for less than 3 percent of the total volume of the subject merchandise, and if the imports from those countries collectively account for more than 7 percent of the volume of all such merchandise imported into the United States during the applicable 12-month period, then imports from such countries are deemed not to be negligible.[4] Subject imports from China accounted for 61.5 percent of total U.S. imports of ammonium sulfate, by quantity, during 2015. Subject imports from China accounted for 62.9 percent, by quantity, of total U.S. imports during May 2015-April 2016.

APPARENT U.S. CONSUMPTION

Table IV-6 and figure IV-2 present data on apparent U.S. consumption and U.S. market shares for ammonium sulfate. Apparent consumption grew by *** percent from 2013 to 2015, but was *** percent lower in the interim period of 2016 than in the interim period of 2015.

The U.S. producers' market share decreased by *** percentage points from 2013 to 2015 and the market share held by subject imports increased by *** percentage points during the same period. U.S. producers' market share was *** percentage points higher in the interim period of 2016 than in the same period in 2015, while subject imports' market share was *** percentage points lower in the interim period of 2016 than in the same period in 2015. The market share of nonsubject imports decreased by *** percentage points from 2013 to 2015 but was *** percentage points higher in the interim 2016 period compared to the same period in 2015.[5]

[3] Sections 703(a)(1), 705(b)(1), 733(a)(1), and 735(b)(1) of the Act (19 U.S.C. §§ 1671b(a)(1), 1671d(b)(1), 1673b(a)(1), and 1673d(b)(1)).

[4] Section 771 (24) of the Act (19 U.S.C § 1677(24)).

[5] The Petitioner calculated market share for domestic producers as falling from *** percent in 2013 to *** percent in 2015. Counsel also calculated market share for subject imports as rising from *** percent in 2013 to *** percent in 2015. Petitioner's prehearing brief, p. 17 and p. 19.

Table IV-6
Ammonium sulfate: Apparent U.S. consumption, 2013-15, January-September 2015, and January-September 2016

Item	Calendar year			January to September	
	2013	2014	2015	2015	2016
	Quantity (short tons)				
U.S. producers' U.S. shipments	***	***	***	***	***
U.S. imports from.--					
China	47,236	229,000	369,570	303,464	152,503
Canada	276,465	277,523	201,897	161,199	152,934
All other sources	6,751	1,905	29,738	28,593	81,648
Subtotal, nonsubject sources	283,216	279,428	231,635	189,792	234,582
Total U.S. imports	330,452	508,428	601,205	493,256	387,084
Apparent U.S. consumption	***	***	***	***	***
	Value (1,000 dollars)				
U.S. producers' U.S. shipments	***	***	***	***	***
U.S. imports from.--					
China	10,277	60,221	68,251	56,187	25,140
Canada	78,587	66,848	38,251	29,892	32,735
All other sources	2,252	875	6,924	6,491	14,432
Subtotal, nonsubject sources	80,840	67,723	45,175	36,383	47,166
Total U.S. imports	91,117	127,944	113,426	92,570	72,306
Apparent U.S. consumption	***	***	***	***	***
	Share of quantity (percent)				
U.S. producers' U.S. shipments	***	***	***	***	***
U.S. imports from.--					
China	***	***	***	***	***
Canada	***	***	***	***	***
All other sources	***	***	***	***	***
Subtotal, nonsubject sources	***	***	***	***	***
Total U.S. imports	***	***	***	***	***
	Share of value (percent)				
U.S. producers' U.S. shipments	***	***	***	***	***
U.S. imports from.--					
China	***	***	***	***	***
Canada	***	***	***	***	***
All other sources	***	***	***	***	***
Subtotal, nonsubject sources	***	***	***	***	***
Total U.S. imports	***	***	***	***	***

Source: Compiled from data submitted in response to Commission questionnaires and official import statistics using HTS statistical reporting number 3102.21.0000 accessed November 11, 2016.

Figure IV-2

Ammonium sulfate: Apparent U.S. consumption, 2013-15, January-September 2015, and January-September 2016

* * * * * * *

PART V: PRICING DATA

FACTORS AFFECTING PRICES

Raw material costs

Raw material costs are a relatively large cost component of ammonium sulfate production. U.S. producers' raw material costs as a share of cost of goods sold decreased from *** percent in 2013 to *** percent in 2015.[1] The primary raw material inputs to ammonium sulfate are ammonia and sulfur. Natural gas is also an input.

A majority of U.S. producers and importers reported that raw material costs either fluctuated or decreased during January 2013-September 2016. U.S. producer *** reported that natural gas and sulfur prices have generally fallen during the period, although forecasts indicate that raw material prices are likely to increase over the next several years. U.S. importers *** reported that decreases in raw material costs have been reflected in the declining prices for ammonium sulfate. Domestic producers stated that they typically cannot pass on changes in raw material costs to prices of ammonium sulfate.[2]

Transportation costs to the U.S. market

Transportation costs for ammonium sulfate shipped from China to the United States averaged 10 percent during 2015. These estimates were derived from official import data and represent the transportation and other charges on imports.[3]

U.S. inland transportation costs

About half of responding U.S. producers (5 of 11) and importers (4 of 8) reported that they typically arrange transportation to their customers.[4] Most U.S. producers reported that their U.S. inland transportation costs ranged from *** percent and importers reported costs of *** percent.

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[1] Raw materials were *** percent of COGS during January-September 2015, and *** percent in January-September 2016.

[2] Hearing transcript, p. 49 (Mazzella Jr.), p. 50 (Hamilton), p. 85 (Mazzella Jr.).

[3] The estimated transportation costs were obtained by subtracting the customs value from the c.i.f. value of the imports for 2015 and then dividing by the customs value based on the HTS subheading 3102.21.0000.

[4] U.S. producer *** reported that both it and its purchasers can arrange for transportation.

PRICING PRACTICES

Pricing methods

As presented in table V-1, most U.S. producers and all responding importers reported using transaction-by-transaction negotiations, and some producers (5 of 11) and importers (3 of 8) reported using contracts. U.S. producer *** reported that it will ***.

Table V-1

Ammonium sulfate: U.S. producers and importers reported price setting methods, by number of responding firms[1]

Method	U.S. producers	U.S. importers
Transaction-by-transaction	9	8
Contract	5	3
Set price list	3	2
Other	0	0
Total responding firms	11	8

[1] The sum of responses down may not add up to the total number of responding firms as each firm was instructed to check all applicable price setting methods employed.

Source: Compiled from data submitted in response to Commission questionnaires.

As shown in table V-2, U.S. producers and importers reported selling a *** of their sales in the spot market, while also selling *** ammonium sulfate via short-term contract in 2015.

Table V-2

Ammonium sulfate: U.S. producers' and importers' shares of U.S. commercial shipments by type of sale, 2015

* * * * * * *

The duration of U.S. producers' short term contracts ranged from *** to *** days while importers' short term contracts ranged from *** to *** days. Four U.S. producers and four importers stated that their short term contracts fix both price and quantity. U.S. producers *** stated that their short term contracts *** while *** short term contracts ***. *** stated that its short term contracts ***. Importers *** reported that their short term contracts ***.

Sales terms and discounts

Most responding U.S. producers (8 of 11) and importers (5 of 7) quote prices on an f.o.b. basis. Of these responding firms, three U.S. producers, ***, and two importers, ***, reported they also quote prices on a delivered basis.

Most responding U.S. producers (8 of 11) and importers (5 of 8) reported no discount policy. U.S. producer *** reported offering ***, rebates based on volume targets, and a prepay program that offers discounted prices when buying before peak demand season. U.S. producer *** reported an annual discount for large volume customers. U.S. producer *** stated that it

has payment term discounts (1/10 net 30). U.S. importer *** reported quantity discounts, freight allowances, and early order programs; and *** reported discounts for prompt payment. Most U.S. producers and importers reported sales terms of net 30 days. Three U.S. producers and one importer reported sales terms of net 15 days.

Price leadership

Ten purchasers reported that AdvanSix is a price leader because of its position as one of the largest U.S. producers. Purchaser *** reported that AdvanSix initiates the pricing for seasonal fill programs, and purchaser *** reported that AdvanSix is a leader in setting storage programs. Purchasers reported other price leaders including U.S. suppliers APF (reported by 6 purchasers), IOC (4 purchasers), and importers Agrium (2 purchasers each), and International Raw Materials (1 purchaser). Purchaser *** reported that APF always markets through a fall stocking program. Purchaser *** stated that Gavilon and other importers over the last 18 months led the market down with oversupply to the U.S. market.

PRICE DATA

The Commission requested U.S. producers and importers to provide quarterly data for the total quantity and f.o.b. value of the following ammonium sulfate products shipped to unrelated U.S. customers during January 2013-September 2016.

Product 1.—Ammonium sulfate in granular form (particles with a diameter of 2.0 millimeters or greater) and sold in bulk, sold to distributors.

Product 2. —Ammonium sulfate in granular form (particles with a diameter of 2.0 millimeters or greater) and sold in bulk, sold to retailers.

Five U.S. producers and seven importers provided usable pricing data for sales of the requested products, although not all firms reported pricing for all products for all quarters.[5] Pricing data reported by these firms accounted for approximately *** percent of U.S. producers' U.S. shipments of ammonium sulfate and *** percent of U.S. shipments of subject imports from China in 2015.[6] [7] [8]

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[5] Per-unit pricing data are calculated from total quantity and total value data provided by U.S. producers and importers. The precision and variation of these figures may be affected by rounding, limited quantities, and producer or importer estimates.

[6] U.S. importer *** reported ***. Staff has included these data in the pricing tables and analysis.

[7] U.S. producer *** reported pricing data for both products however the reported product was less than 2 mm. It explained that the *** of ammonium sulfate that it sells does compete with granules larger than 2 mm for direct applications. Staff has included these data in the pricing tables and analysis.

[8] Producer ***. Staff has not included these data in the pricing data set.

Price data for products 1-2 are presented in tables V-3 to V-4 and figures V-1 to V-2. Price data for nonsubject imports from Canada are presented in appendix D.

Table V-3

Ammonium sulfate: Weighted-average f.o.b. prices and quantities of domestic and imported product 1,[1] and margins of underselling/(overselling), by quarters, January 2013-September 2016

	United States		China		
Period	Price ($ per short ton)	Quantity (short tons)	Price ($ per short ton)	Quantity (short tons)	Margin (percent)
2013:					
Jan.-Mar.	340	255,913	***	***	***
Apr.-June	314	286,055	***	***	***
July-Sept.	249	350,638	304	3,809	(22.0)
Oct.-Dec.	241	240,038	***	***	***
2014:					
Jan.-Mar.	244	333,501	***	***	***
Apr.-June	253	397,232	***	***	***
July-Sept.	233	268,007	***	***	***
Oct.-Dec.	240	248,721	***	***	***
2015:					
Jan.-Mar.	255	297,779	***	***	***
Apr.-June	260	375,941	***	***	***
July-Sept.	239	271,134	***	***	***
Oct.-Dec.	233	210,492	***	***	***
2016:					
Jan.-Mar.	229	259,831	208	61,583	9.5
Apr.-June	238	345,669	***	***	***
July-Sept.	189	330,459	***	***	***

[1] Product 1: Ammonium sulfate in granular form (particles with a diameter of 2.0 millimeters or greater) and sold in bulk, sold to distributors.

Source: Compiled from data submitted in response to Commission questionnaires.

Table V-4

Ammonium sulfate: Weighted-average f.o.b. prices and quantities of domestic and imported product 2,[1] and margins of underselling/(overselling), by quarters, January 2013-September 2016

Period	United States		China		
	Price ($ per short ton)	Quantity (short tons)	Price ($ per short ton)	Quantity (short tons)	Margin (percent)
2013:					
Jan.-Mar.	360	45,598	***	***	***
Apr.-June	356	60,808	***	***	***
July-Sept.	***	***	***	***	***
Oct.-Dec.	239	50,628	***	***	***
2014:					
Jan.-Mar.	223	68,244	--	0	--
Apr.-June	248	99,411	--	0	--
July-Sept.	253	45,135	--	0	--
Oct.-Dec.	258	55,139	--	0	--
2015:					
Jan.-Mar.	289	93,289	***	***	***
Apr.-June	289	99,163	***	***	***
July-Sept.	***	***	***	***	***
Oct.-Dec.	***	***	***	***	***
2016:					
Jan.-Mar.	223	98,539	***	***	***
Apr.-June	235	118,399	***	***	***
July-Sept.	***	***	***	***	***

[1] Product 2: Ammonium sulfate in granular form (particles with a diameter of 2.0 millimeters or greater) and sold in bulk, sold to retailers.

Source: Compiled from data submitted in response to Commission questionnaires.

Figure V-1

Ammonium sulfate: Weighted-average prices and quantities of domestic and imported product 1, by quarters, January 2013-September 2016

* * * * * * *

Figure V-2

Ammonium sulfate: Weighted-average prices and quantities of domestic and imported product 2, by quarters, January 2013-September 2016

* * * * * * *

Price trends

Prices decreased overall during January 2013- September 2016. However, ammonium sulfate demand is seasonal and prices for product 1 exhibited this seasonality by increasing during the early quarters of 2014, 2015, and 2016, though never reaching the levels seen in 2013. Table V-5 summarizes the price trends, by pricing product and by country. As shown in

the table, domestic prices declined *** percent during January 2013-September 2016 while price decreases for imports from China ranged from *** to *** percent.

Table V-5

Ammonium sulfate: Summary of weighted-average f.o.b. prices for products 1 and 2 from the United States and China

* * * * * * *

Price comparisons

As shown in table V-6, prices for ammonium sulfate imported from China were below those for U.S.-produced product in 14 of 26 instances (469,093 short tons); margins of underselling ranged from 1.6 percent to 19.9 percent. In the remaining 12 instances (82,420 short tons), prices for ammonium sulfate from China were between 2.7 percent and 60.6 percent above prices for the domestic product.

Table V-6

Ammonium sulfate: Instances of underselling/overselling and the range and average of margins, by product, January 2013-September 2016

Product	Underselling				
	Number of quarters	Quantity (short tons)	Average margin (percent)	Margin Range (percent)	
				Min	Max
Product 1	***	***	***	***	***
Product 2	***	***	***	***	***
Total, underselling	14	469,093	9.4	1.6	19.9
Product	**(Overselling)**				
	Number of quarters	Quantity (short tons)	Average margin (percent)	Margin Range (percent)	
				Min	Max
Product 1	***	***	***	***	***
Product 2	***	***	***	***	***
Total, overselling	12	82,420	(14.9)	(2.7)	(60.6)

[1] These data include only quarters in which there is a comparison between the U.S. and subject product.

Source: Compiled from data submitted in response to Commission questionnaires.

LOST SALES AND LOST REVENUE

In the preliminary phase of the investigations, the Commission requested U.S. producers of ammonium sulfate to report purchasers where they experienced instances of lost sales or revenue due to competition from imports of ammonium sulfate from China during January

2013- March 2016.[9] The two responding U.S. producers identified 35 firms where they lost sales or revenue (13 consisting of lost sales allegations, 14 consisting of lost revenue allegations, and 8 consisting of both types of allegations). The allegations consisted of primarily ammonium sulfate in granular and mid-grade form. Four purchasers, ***, submitted responses to the lost sales lost revenue survey.

In the final phase of the investigations, of the ten responding U.S. producers, 6 reported that they had to reduce prices, 5 of which reported that they had to roll back announced price increases and that they had lost sales. Specifically, IOC announced a $10 per short ton price increase in July 2015 and ***, which failed.[10]

Staff contacted 40 purchasers and received responses from 20 purchasers.[11] Responding purchasers reported purchasing *** short tons of ammonium sulfate in 2015 (table V-7).

Of the 21 responding purchasers, 11 reported that, since 2013, they had purchased imported ammonium sulfate from China instead of U.S.-produced product. All of these purchasers reported that subject import prices were lower than those for U.S.-produced product, and four of these purchasers reported that price was a primary reason for the decision to purchase imported product rather than U.S.-produced product. Purchasers estimated that they shifted purchases of *** short tons (table V-8). Purchasers identified supply and availability as non-price reasons for purchasing imported rather than U.S.-produced product.

Of the 21 responding purchasers, 7 reported that U.S. producers had reduced prices in order to compete with lower-priced imports from China (table V-9; 12 reported that they did not know). The reported estimated price reductions ranged from 3 to 46 percent. In describing the price reductions, *** stated that it observed pressure from Chinese ammonium sulfate in the U.S. river system (i.e. barge sales) only and *** stated that seasonal price reductions were usually based on product availability.

Table V-7
Ammonium sulfate: Purchasers' responses to purchasing patterns

* * * * * * *

[9] Petitioners submitted lost sale and lost revenue allegations using the transaction-specific template that, due to changes in Commission rules, is no longer used as of October 1, 2015.

[10] Domestic producers' posthearing brief, Answers to questions from Commissioner Schmidtlein, pp. A-2-3.

[11] Four purchasers submitted lost sales lost revenue survey responses in the preliminary phase; all of these purchasers submitted questionnaire responses in the final phase.

Table V-8
Ammonium sulfate: Purchasers' responses to changing supply sources

* * * * * * *

Table V-9
Ammonium sulfate: Purchasers' responses to U.S. producer price reductions

* * * * * * *

PART VI: FINANCIAL EXPERIENCE OF U.S. PRODUCERS

BACKGROUND

Seven U.S. producers reported usable financial results on their ammonium sulfate operations.[1] Ammonium sulfate revenue primarily reflects commercial sales (*** percent of total sales value), followed by internal consumption (*** percent), and transfers (*** percent).[2] [3]

U.S. producers are mixed in terms of whether they designate ammonium sulfate as a primary product, co-product, or by-product.[4] With regard to the financial results presented in this report, three U.S. producers (***)[5] reported that ammonium sulfate is a primary product, two U.S. producers (***)[6] reported that it is a co-product, and two producers (***)[7] reported that it is a by-product. Consistent with differences in accounting treatment, the manner and conditions pursuant to which ammonium sulfate is produced and marketed varies among the U.S. producers.

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[1] ***. USITC auditor notes (final). ***. Ibid.

The financial results presented in this section of the report were reported on the basis of generally accepted accounting principles (GAAP) and primarily for calendar-year periods. ***.

[2] ***. December 7, 2016 e-mail with attachments (including revised table III-9a) from *** to USITC auditor. ***. December 9, 2016 e-mail with attachment from *** to USITC auditor.

[3] Staff conducted a verification of PCI's U.S. producer questionnaire on January 5-6, 2017. Data changes pursuant to verification are reflected in this and other relevant sections of the staff report. Verification report (PCI), p. 3.

[4] ***. With regard to the distinction between co-products and byproducts from an accounting perspective, "{j}oint products, also called main products, result from those manufacturing operations in which companies simultaneously produce two or more products of significant value. Byproducts are merely incidental products resulting from the processing of another product. The distinction between joint and byproducts is largely dependent on the market value of the products. Companies produce joint products in larger quantities. Joint products have larger market values and make a more meaningful contribution to revenue than by-products." *Cost Accounting: Using a Cost Management Approach*, L. Gayle Rayburn, Irwin, 1993, pp. 258-259.

[5] ***. December 9, 2016 e-mail with attachment from *** to USITC auditor.

***. December 7, 2016 *** submission (incl. revised table III-9a) on behalf of ***.

***. December 8, 2016 e-mail with attachment from *** to USITC auditor.

[6] ***. *** U.S. producer questionnaire, response to III-5.

***. December 7, 2016 e-mail with attachments from *** to USITC auditor.

[7] ***. December 8, 2016 e-mail with attachment from *** to USITC auditor. ***. USITC auditor notes (final).

***. December 7, 2016 e-mail with attachments (including revised table III-9a) from *** to USITC auditor. ***. *** U.S. producer questionnaire, response to III-5.

***. December 7, 2016 e-mail with attachments from *** to USITC auditor. ***. *** U.S. producer questionnaire, response to III-5.

OPERATIONS ON AMMONIUM SULFATE

Table VI-1 presents the aggregate income-and-loss data for U.S. producers' ammonium sulfate operations. Table VI-2 presents corresponding changes in average unit values.[8] Table VI-3 presents a variance analysis of the reported financial results and table VI-4 presents selected financial information by firm.[9]

Sales volume and value

Company-specific shares of total ammonium sulfate sales value cover a relatively wide range with the smallest U.S. producer (***) accounting for *** percent of total sales value and the largest U.S. producer (***) accounting for *** percent.[10]

The revenue section of the table VI-3 variance analysis shows that the overall decline in full-year ammonium sulfate revenue was due to a mixed pattern of negative and positive price and volume variances. The decline in total revenue in 2014 was the result of a large negative price variance which was partially offset by a positive volume variance. In contrast, the decline in 2015 revenue was due to a negative volume variance which was partially offset by a positive price variance. Lower interim 2016 revenue compared to interim 2015 reflects price and volume variances which were both negative.

While the directional pattern of average ammonium sulfate sales value was correlated to some extent with average raw material cost for parts of the period (see table VI-1), U.S. producers indicated that there is no direct link between changes in average sales value and the cost of primary raw material inputs.[11]

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[8] Given the predominance of commercial sales, as noted previously, a single line item for ammonium sulfate revenue is presented in this section of the report.

[9] The Commission's variance analysis is calculated in three parts: sales variance, cost of goods sold (COGS) variance, and SG&A expenses variance. Each part consists of a price variance (in the case of the sales variance) or a cost or expense variance (in the case of the COGS and SG&A expenses variance), and a volume variance. The sales or cost/expense variance is calculated as the change in unit price or per-unit cost/expense times the new volume, while the volume variance is calculated as the change in volume times the old unit price or per-unit cost/expense. As summarized at the bottom of table VI-3, the price variance is from sales, the cost/expense variance is the sum of those items from the COGS and SG&A variances, respectively, and the volume variance is the sum of the volume components of the net sales, COGS, and SG&A expenses variances. In general, the utility of the Commission's variance analysis is enhanced when product mix remains the same throughout the period.

[10] In ascending order, the remaining U.S. producers that reported usable financial results to the Commission account for the following company-specific shares of total ammonium sulfate sales value: ***.

[11] ***. December 7, 2016 e-mail with attachment from *** to USITC auditor.

***. December 7, 2016 *** submission (incl. revised table III-9a) on behalf of ***.

Table VI-1
Ammonium sulfate: Results of operations of U.S. producers, 2013-15, January-September 2015, and January-September 2016

Item	Fiscal year			January to September	
	2013	2014	2015	2015	2016
	Quantity (short tons)				
Total net sales	3,187,504	3,519,838	3,118,386	2,376,004	2,320,611
	Value (1,000 dollars)				
Total net sales	645,746	589,706	546,912	433,218	368,671
Cost of goods sold.-- Raw materials	472,137	495,777	418,259	335,289	254,427
Direct labor	40,258	44,611	44,989	33,883	34,518
Other factory costs	65,205	70,259	59,298	47,242	41,372
Total COGS	577,600	610,647	522,546	416,414	330,317
Gross profit	68,146	(20,941)	24,366	16,804	38,354
SG&A expense	67,421	60,380	183,788	150,769	29,709
Operating income or (loss)	725	(81,321)	(159,422)	(133,965)	8,645
Interest expense	82	97	263	196	261
All other expenses	11,117	8,015	7,730	5,846	5,113
All other income	419	560	1,572	1,422	447
Net income or (loss)	(10,055)	(88,873)	(165,843)	(138,585)	3,718
Depreciation/amortization	26,292	23,614	22,276	18,354	13,353
Estimated cash flow from operations[1]	16,237	(65,259)	(143,567)	(120,231)	17,071
	Ratio to net sales (percent)				
Cost of goods sold.-- Raw materials	73.1	84.1	76.5	77.4	69.0
Direct labor	6.2	7.6	8.2	7.8	9.4
Other factory costs	10.1	11.9	10.8	10.9	11.2
Average COGS	89.4	103.6	95.5	96.1	89.6
Gross profit	10.6	(3.6)	4.5	3.9	10.4
SG&A expense	10.4	10.2	33.6	34.8	8.1
Operating income or (loss)	0.1	(13.8)	(29.1)	(30.9)	2.3
Net income or (loss)	(1.6)	(15.1)	(30.3)	(32.0)	1.0

Table continued on following page.

Table VI-1
Ammonium sulfate: Results of operations of U.S. producers, 2013-15, January-September 2015, and January-September 2016

Item	Calendar year			January to September	
	2013	2014	2015	2015	2016
	Ratio to total COGS (percent)				
Cost of goods sold.-- Raw materials	81.7	81.2	80.0	80.5	77.0
Direct labor	7.0	7.3	8.6	8.1	10.4
Other factory costs	11.3	11.5	11.3	11.3	12.5
Average COGS	100.0	100.0	100.0	100.0	100.0
	Unit value (dollars per short ton)				
Total net sales	203	168	175	182	159
Cost of goods sold.-- Raw materials	148	141	134	141	110
Direct labor	13	13	14	14	15
Other factory costs	20	20	19	20	18
Average COGS	181	173	168	175	142
Gross profit	21	(6)	8	7	17
SG&A expense	21	17	59	63	13
Operating income or (loss)	0	(23)	(51)	(56)	4
Net income or (loss)	(3)	(25)	(53)	(58)	2
	Number of firms reporting				
Operating losses	3	5	3	3	5
Net losses	4	5	3	3	5
Data	7	7	7	7	7

[1] ***. USITC auditor notes (final).

Source: Compiled from data submitted in response to Commission questionnaires.

Table VI-2
Ammonium sulfate: Changes in average per short ton values, between fiscal years and partial periods

Item	Between fiscal years			January to September
	2013-15	2013-14	2014-15	2015-16
	Changes in unit values (dollars per short ton)			
Total net sales	(27)	(35)	8	(23)
Cost of goods sold.-- Raw materials	(14)	(7)	(7)	(31)
Direct labor	2	0	2	1
Other factory costs	(1)	(0)	(1)	(2)
Average COGS	(14)	(8)	(6)	(33)
Gross profit	(14)	(27)	14	9
SG&A expense	38	(4)	42	(51)
Operating income or (loss)	(51)	(23)	(28)	60
Net income or (loss)	(50)	(22)	(28)	60

Source: Compiled from data submitted in response to Commission questionnaires.

Table VI-3
Ammonium Sulfate: Variance analysis of operations of U.S. producers, 2013-15, January-September 2015, and January-September 2016

Item	Between fiscal years			January to September
	2013-15	2013-14	2014-15	2015-16
Net sales:				
Price variance	(84,832)	(123,366)	24,464	(54,447)
Volume variance	(14,002)	67,326	(67,258)	(10,100)
Net sales variance	(98,834)	(56,040)	(42,794)	(64,547)
COGS:				
Price variance	42,529	27,174	18,454	76,389
Volume variance	12,525	(60,221)	69,647	9,708
COGS variance	55,054	(33,047)	88,101	86,097
Gross profit variance	(43,780)	(89,087)	45,307	21,550
SG&A expenses:				
Cost/expense variance	(117,829)	14,070	(130,295)	117,545
Volume variance	1,462	(7,029)	6,887	3,515
Total SG&A expense variance	(116,367)	7,041	(123,408)	121,060
Operating income variance	(160,147)	(82,046)	(78,101)	142,610
Summarized (at the operating income level) as:				
Price variance	(84,832)	(123,366)	24,464	(54,447)
Net cost/expense variance	(75,300)	41,245	(111,840)	193,934
Net volume variance	(16)	76	9,275	3,123

Source: Compiled from data submitted in response to Commission questionnaires.

On a company-specific basis and with some exceptions, table VI-4 shows that U.S. producers generally followed the same directional pattern in terms of changes in total sales volume and average sales value. Notwithstanding directional similarities, however, company-specific changes in total sales volume and average sales value differed in terms of magnitude.

Cost of goods sold

Total raw material cost is the single largest component of COGS and ranged from a high of 81.7 percent of total COGS in 2013 to a low of 77.0 percent in interim 2016. As shown in table VI-1, average raw material cost declined during 2013-15 and was at its lowest level in interim 2016.

U.S. producers of primary or co-product ammonium sulfate reported sulfur and ammonia as the raw material inputs.[12] Producers of byproduct ammonium sulfate were mixed in terms of primary input.[13] As shown in table VI-4, the range of company-specific average raw

[12] U.S. producers reported similar patterns in terms of changes in raw material pricing/cost. ***. December 7, 2016 e-mail with attachments from *** to USITC auditor.

***. December 9, 2016 e-mail with attachment from *** to USITC auditor.

Table VI-4
Ammonium sulfate: Financial results of operations, by firm, 2013-15, January-September 2015, and January-September 2016

* * * * * * *

material costs appears to reflect, at least in part, the different routes by which ammonium sulfate is produced.

Other factory costs are the second largest component of COGS and were 11.3 percent of total COGS throughout most of the period and reached their highest level in interim 2016 (12.5 percent). As shown in table VI-1, average other factory costs declined during 2013-15 and, like average raw material cost, reached their lowest level in interim 2016. Similar to raw material costs, company-specific average other factory costs reflect a relatively wide range (see table VI-4).[14]

Direct labor, the smallest component of COGS, increased as a share of total COGS from 7.0 percent in 2013 to a high of 10.4 percent in interim 2016. This increase reflects the declines in average raw material cost and average other factory costs noted above, as well as an increase in average direct labor during the period.

Notwithstanding the range of company-specific average COGS reported in table VI-4, U.S. producers were, for the most part, directionally uniform in terms of reporting declines in average COGS. As shown in table VI-2, the primary contributor to this pattern on an overall basis was declining average raw material cost, most notably in interim 2016 compared to interim 2015, as well as smaller declines in average other factory costs. Increases in direct labor cost, as noted above, had a marginal impact on average COGS.

Gross profit or loss

Table VI-1 shows that overall gross profit ratio (total gross profit divided by total revenue) was at its highest level of the period in 2013, declined to a gross loss in 2014, improved and was again positive in 2015, and was at its second highest level in interim 2016.

On an overall basis, the 2014 gross loss reflects a decline in average sales value that was only partially offset by a corresponding decline in average raw material costs.[15] In contrast, the relative improvement in 2015 reflects an increase in average sales value which was enhanced by a continued decline in average raw material cost. The higher gross profit in interim 2016

(…*continued*)

[13] ***. December 7, 2016 e-mail with attachments (including revised table III-9a) from *** to USITC auditor. ***. December 7, 2016 e-mail with attachments from *** to USITC auditor.

[14] At the Commission's hearing, industry witnesses noted that a substantial amount of ammonium sulfate costs are fixed which requires high capacity utilization in order to minimize unit costs. Hearing transcript, p. 32 (Mazella, Jr.), pp. 70-71 (Hamilton).

[15] Table VI-4 shows that most U.S. producers reported a contraction in gross profit or an increase in gross loss in 2014. With regard to its own pattern of financial results ***. December 7, 2016 e-mail with attachment from *** to USITC auditor.

compared to interim 2015 primarily reflects lower average raw material cost, which more than offset the corresponding decline in average sales value.

On a company-specific basis, financial results at the gross level varied considerably (see table VI-4) with *** U.S. producers, (***) reporting gross losses throughout the period.[16] ***,[17] which reported gross profit throughout the period, the remaining U.S. producers, ***, reported a mixed pattern of gross profit and gross losses.[18]

SG&A expenses and operating income or loss

As shown in table VI-4 and with the exception of ***[19] and ***,[20] company-specific SG&A ratios (total SG&A expenses divided by total revenue) generally remained within a narrow range during the period.

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[16] ***. USITC auditor notes (final).

***. December 7, 2016 e-mail with attachments from *** to USITC auditor. ***. December 15, 2016 e-mail from *** to USITC auditor.

***. December 7, 2016 e-mail with attachments from *** to USITC auditor.

[17] ***. December 7, 2016 e-mail with attachment from *** to USITC auditor.

[18] ***. December 7, 2016 e-mail with attachments (including revised table III-9a) from *** to USITC auditor.

***. December 9, 2016 e-mail with attachment from *** to USITC auditor.

***. December 7, 2016 *** submission (incl. revised table III-9a) on behalf of ***.

[19] ***. January 10, 2017 *** submission on behalf of ***.

With regard to the initial goodwill impairment in 2013, Rentech's 2014 10-K provided the following background: "The inventory impairment . . . negative gross margin and EBITDA in the calendar year ended December 31, 2013 and revised cash flow projections developed during the calendar year ended December 31, 2013 indicated that an impairment of the goodwill related to the Pasadena Facility was probable. Ammonium sulfate is the primary product of the Pasadena Facility. Results for the calendar year ended December 31, 2013 and our projections of future cash flow from the production and sale of this product are worse than the results originally projected in late 2012, when the Partnership acquired Agrifos . . . The primary cause of the reduction in the estimated fair value of the Pasadena reporting unit is the decline in the cash flow expected to be generated from the sale of ammonium sulfate, compared to the expectations at the time of the acquisition. A major cause of the lower expected cash flows is a decline in the level of prices, and among other things, lower corn prices, poor weather conditions for fertilizer application throughout the United States in 2013 and increased supply of urea from China . . . based upon its analysis of the value of the Pasadena reporting unit using the Income Approach, the Partnership recorded an estimated impairment to goodwill of $30.0 million during the quarter ended September 30, 2013." Rentech 2014 10-K, p. 91. With respect to 2014 and 2015 impairments, Rentech's 2015 10-K stated that "During 2014, we lowered our profitability expectations for the Pasadena Facility primarily due to lower projected market prices for ammonium sulfate. As a result, during the year ended December 31, 2014, we recorded a goodwill impairment charge of $27.2 million relating to the Agrifos Acquisition, and we incurred an approximate $6.0 million write-down of ammonium sulfate inventory. During 2015, we recorded asset impairment charges relating to the Pasadena Facility totaling $160.6 million and wrote down the value of ammonium sulfate inventory by $2.2 million to its net realizable value." Rentech 2015 10-K, p. 25.

[20] ***.

When generated, positive gross profit was generally not high enough to cover corresponding SG&A expenses which in turn yielded operating losses of varying magnitudes throughout most of the period. The exceptions were 2013 and interim 2016 when the U.S. industry reported operating profit.

Interest expense, other expenses, and net income or loss

Below operating results (see table VI-1), the primary item impacting net income was other expenses. As shown in table VI-1, interest expense and other income were generally minor in absolute terms.[21] The declining level of other expenses during the period, attributable to the reduction of ***, as well as an increase in other income in 2015, resulted in a modest deviation in the pattern of ammonium sulfate net results as compared to corresponding operating results.

CAPITAL EXPENDITURES AND RESEARCH AND DEVELOPMENT EXPENSES

Table VI-5 presents data on the U.S. producers' capital expenditures and research and development (R&D) expenses related to their ammonium sulfate operations.

The U.S. industry's total capital expenditures increased to their highest level in 2014, declined to their lowest full-year level in 2015, and were higher in interim 2016 compared to interim 2015. *** (*** percent of total capital expenditures) and *** (*** percent) reported their highest capital expenditure levels in 2014.[22] *** (*** percent of total capital expenditures) and *** (***) reported their highest levels in interim 2016.[23] *** (*** percent of total capital expenditures) reported its highest level in 2013 and *** (*** percent) reported its *** capital expenditures in interim 2016.[24] *** reported *** capital expenditures during the period.

As shown in table VI-5, *** U.S. producers to report R&D expenses. ***.[25] ***.[26]

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[21] ***. December 15, 2016 e-mail from *** to USITC auditor.

[22] ***. *** U.S. producer questionnaire, response to III-13 (note 1).
***. *** U.S. producer questionnaire, response to III-13 (note 1).

[23] ***. *** U.S. producer questionnaire, response to III-13 (note 1).
***. *** U.S. producer questionnaire, response to III-13 (note 1).

[24] ***. *** U.S. producer questionnaire, response to III-13 (note 1).

[25] *** U.S. producer questionnaire, response to III-13 (note 2).

[26] *** U.S. producer questionnaire, response to III-13 (note 2).

Table VI-5
Ammonium sulfate: U.S. producers' capital expenditures and research and development (R&D) expenses, 2013-15, January-September 2015, January-September 2016

Firm	Calendar year			January-September	
	2013	2014	2015	2015	2016
	Capital expenditures ($1,000)				
* * * * * * *					
Total capital expenditures	66,473	81,677	51,963	34,567	50,521
	Research and development expenses ($1,000)				
* * * * * * *					
Total R&D expenses	1,888	2,275	2,515	2,086	1,922

Source: Compiled from data submitted in response to Commission questionnaires.

ASSETS AND RETURN ON INVESTMENT

Table VI-6 presents data on the U.S. producers' total assets, asset turnover (sales divided by total assets), and return on assets.[27]

Table VI-6
Ammonium sulfate: U.S. producers' total assets, asset turnover, and return on assets, 2013-15

Firm	Fiscal years		
	2013	2014	2015
	Total net assets (1,000 dollars)		
* * * * * * *			
Total net assets	461,249	481,848	335,791
	Asset turnover ratio (multiple)		
* * * * * * *			
Average asset turnover	1.4	1.2	1.6

Table continued on following page.

[27] With respect to a company's overall operations, staff notes that a total asset value (i.e., the bottom line number on the asset side of a company's balance sheet) reflects an aggregation of a number of assets which in many instances are not product specific. Accordingly, high-level allocation factors presumably were required, at least to some extent, in order to report a total asset value specific to U.S. ammonium sulfate operations. As such, it should be noted that the pattern of asset values reported can reflect changes in underlying asset account balances, as well as period-to-period variations in relevant allocation factors.

Table VI-6--Continued
Ammonium sulfate: U.S. producers' total assets, asset turnover, and return on assets, 2013-15

Firm	Fiscal years		
	2013	2014	2015
	Operating return on assets (percent)		
* * * * * * *			
Average operating return on assets	0.2	(16.9)	(47.5)

[1] ***. *** U.S. producer questionnaire, response to III-12 (note 1).
[2] ***. *** U.S. producer questionnaire, response to III-12 (note 1). ***. *** U.S. producer questionnaire, response to III-12 (note 1).

Source: Compiled from data submitted in response to Commission questionnaires.

CAPITAL AND INVESTMENT

The Commission requested U.S. producers of ammonium sulfate to describe any actual or potential negative effects on their return on investment or their growth, investment, ability to raise capital, existing development and production efforts (including efforts to develop a derivative or more advanced version of the product), or the scale of capital investments as a result of imports of ammonium sulfate from China. Table VI-7 tabulates the responses regarding actual negative effects on investment, growth and development, as well as anticipated negative effects. Table VI-8 presents the narrative responses of U.S. producers regarding actual and anticipated negative effects on investment, growth and development.

Table VI-7
Ammonium sulfate: Negative effects of imports from China on investment, growth, and development since January 1, 2013

Item	No	Yes
Negative effects on investment[1]	6	4
Cancellation, postponement, or rejection of expansion projects		1
Denial or rejection of investment proposal		0
Reduction in the size of capital investments		2
Return on specific investments negatively impacted		3
Other		3
Negative effects on growth and development[1]	7	3
Rejection of bank loans		0
Lowering of credit rating		1
Problem related to the issue of stocks or bonds		0
Ability to service debt		0
Other		4
Anticipated negative effects of imports[2]	3	8

[1] ***.
[2] ***.

Source: Compiled from data submitted in response to Commission questionnaires.

Table VI-8
Ammonium sulfate: Narrative responses of U. S. producers regarding actual and anticipated negative effects of imports of ammonium sulfate from China on investment, growth, and development since January 1, 2013

* * * * * * *

PART VII: THREAT CONSIDERATIONS AND INFORMATION ON NONSUBJECT COUNTRIES

Section 771(7)(F)(i) of the Act (19 U.S.C. § 1677(7)(F)(i)) provides that—

> *In determining whether an industry in the United States is threatened with material injury by reason of imports (or sales for importation) of the subject merchandise, the Commission shall consider, among other relevant economic factors*[1]*--*
>
> *(I) if a countervailable subsidy is involved, such information as may be presented to it by the administering authority as to the nature of the subsidy (particularly as to whether the countervailable subsidy is a subsidy described in Article 3 or 6.1 of the Subsidies Agreement), and whether imports of the subject merchandise are likely to increase,*
>
> *(II) any existing unused production capacity or imminent, substantial increase in production capacity in the exporting country indicating the likelihood of substantially increased imports of the subject merchandise into the United States, taking into account the availability of other export markets to absorb any additional exports,*
>
> *(III) a significant rate of increase of the volume or market penetration of imports of the subject merchandise indicating the likelihood of substantially increased imports,*
>
> *(IV) whether imports of the subject merchandise are entering at prices that are likely to have a significant depressing or suppressing effect on domestic prices, and are likely to increase demand for further imports,*

[1] Section 771(7)(F)(ii) of the Act (19 U.S.C. § 1677(7)(F)(ii)) provides that "The Commission shall consider {these factors} . . . as a whole in making a determination of whether further dumped or subsidized imports are imminent and whether material injury by reason of imports would occur unless an order is issued or a suspension agreement is accepted under this title. The presence or absence of any factor which the Commission is required to consider . . . shall not necessarily give decisive guidance with respect to the determination. Such a determination may not be made on the basis of mere conjecture or supposition."

(V) inventories of the subject merchandise,

(VI) the potential for product-shifting if production facilities in the foreign country, which can be used to produce the subject merchandise, are currently being used to produce other products,

(VII) in any investigation under this title which involves imports of both a raw agricultural product (within the meaning of paragraph (4)(E)(iv)) and any product processed from such raw agricultural product, the likelihood that there will be increased imports, by reason of product shifting, if there is an affirmative determination by the Commission under section 705(b)(1) or 735(b)(1) with respect to either the raw agricultural product or the processed agricultural product (but not both),

(VIII) the actual and potential negative effects on the existing development and production efforts of the domestic industry, including efforts to develop a derivative or more advanced version of the domestic like product, and

(IX) any other demonstrable adverse trends that indicate the probability that there is likely to be material injury by reason of imports (or sale for importation) of the subject merchandise (whether or not it is actually being imported at the time).[2]

Information on the nature of the subsidies was presented earlier in this report; information on the volume and pricing of imports of the subject merchandise is presented in *Parts IV* and *V*; and information on the effects of imports of the subject merchandise on U.S. producers' existing development and production efforts is presented in *Part VI*. Information on inventories of the subject merchandise; foreign producers' operations, including the potential for "product-shifting;" any other threat indicators, if applicable; and any dumping in third-country markets, follows. Also presented in this section of the report is information obtained for consideration by the Commission on nonsubject countries.

[2] Section 771(7)(F)(iii) of the Act (19 U.S.C. § 1677(7)(F)(iii)) further provides that, in antidumping investigations, ". . . the Commission shall consider whether dumping in the markets of foreign countries (as evidenced by dumping findings or antidumping remedies in other WTO member markets against the same class or kind of merchandise manufactured or exported by the same party as under investigation) suggests a threat of material injury to the domestic industry."

THE INDUSTRY IN CHINA

The Commission issued foreign producers' or exporters' questionnaires to 73 firms believed to produce and/or export ammonium sulfate from China.[3] Usable responses to the Commission's questionnaire were received from one firm, Bluestar-Adisseo Nanjing Co., Ltd. This firm *** over the period being examined. According to estimates requested of this firm, its production of ammonium sulfate accounted for *** of overall production in China in 2015. Additionally, ammonium sulfate accounts for ***. The ammonium sulfate it produces is ***. Tables VII-1 through VII-4 present information on the ammonium sulfate operations of the responding producer in China. Table VII-5 presents Chinese exports as reported by China Customs in the GTIS/GTA database.

China's ammonium sulfate production capacity has expanded rapidly, although the extent of this expansion is not clear from the information available. *Fertilizer International* estimates Chinese capacity grew 43 percent from 2010-14,[4] while ***.[5] [6] This expansion has been largely driven by the country's efforts to become self-sufficient in caprolactam production. The International Fertilizer Association estimates that the majority of China's ammonium sulfate production was based on emissions processing in 2010, with caprolactam co-production accounting for only 13 percent.[7] Since that time, China has expanded its caprolactam production capacity. ***.[8] ***.[9]

In China, as in other markets, ammonium sulfate is primarily used in agricultural applications, ***.[10] China's production capacity appears to exceed its domestic consumption. *Fertilizer International* estimates China's 2013 production at 4,725,000 tons, with domestic consumption estimated at 1,500,000 tons.[11]

From 2013-15, China's exports increased as it expanded to new markets. In 2013, the primary export markets for Chinese ammonium sulfate were Southeast Asian countries:

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[3] These firms were identified through a review of information submitted in the petition and contained in proprietary Customs records.

[4] "Ammonium Sulphate Heads from East to West," *Fertilizer International*, November-December, 2015, p. 22.

[5] ***.

[6] Petitioners allege that China has significant underutilized capacity. They provide data that in 2013 China's ammonium sulfate capacity was 9.87 million MT, but also in 2013 produced 4.20 million MT of ammonium sulfate, a capacity utilization rate of 72.0 percent. Petitioner's prehearing brief, p. 41-42.

[7] "Ammonium Sulphate Heads from East to West," *Fertilizer International*, November-December, 2015, p. 22.

[8] ***.

[9] ***.

[10] ***.

[11] "Ammonium Sulphate Heads from East to West," *Fertilizer International*, November-December, 2015, p. 20.

Indonesia, Vietnam, the Philippines, and Malaysia (table VII-5). However, Brazil, Turkey, and the United States have emerged as increasingly important export markets for Chinese product since 2013. During 2013-15, China's total exports increased by 81 percent from 3.2 million tons to 5.8 million tons. During the same period, exports to the United States increased more than five-fold, from 50 thousand tons to 317 thousand tons. This increase in exports to the United States coincided with both the increase in Chinese production capacity and a rise in Chinese compacting capacity, allowing for export of higher-value granular ammonium sulfate, the main form consumed in the U.S. market.[12] According to proprietary Customs data, ***.

Table VII-1
Ammonium sulfate: Summary data on firms in China, 2015

Firm	Production (short tons)	Share of reported production (percent)	Exports to the United States (short tons)	Share of reported exports to the United States (percent)	Total shipments (short tons)	Share of firm's total shipments exported to the United States (percent)
Bluestar-Adisseo Nanjing Co., Ltd.	***	***	***	***	***	***
Total	***	***	***	***	***	***

Source: Compiled from data submitted in response to Commission questionnaires.

Table VII-2
Ammonium sulfate: Chinese producers' reported changes in operations, since January 1, 2013

* * * * * * *

Table VII-3
Ammonium sulfate: Data on industry in China, 2013-15, January-September 2015, January-September 2016, and projection calendar years 2016 and 2017

* * * * * * *

Table VII-4
Ammonium sulfate: Chinese producers' overall capacity and production on the same equipment as subject production, 2013-15, January-September 2015, and January-September 2016

* * * * * * *

[12] Conference transcript, p. 28 (Hamilton) and hearing transcript, p. 30 (Hamilton).

Table VII-5

Ammonium sulfate: Chinese exports by destination market, 2013-15

Item	Calendar year		
	2013	2014	2015
	Quantity (*short tons*)		
China's exports to the United States	50,144	96,553	317,100
China's exports to other major destination markets.--			
Indonesia	379,444	543,633	1,138,166
Vietnam	706,110	658,592	805,594
Brazil	105,501	186,993	649,973
Turkey	101,292	424,346	403,049
Philippines	286,107	436,767	393,645
Malaysia	401,194	544,167	364,878
El Salvador	55,592	139,329	168,826
India	1,847	111,275	147,045
All other destination markets	1,129,730	1,442,991	1,436,356
Total China exports	3,216,962	4,584,645	5,824,633
	Value (*1,000 dollars*)		
China's exports to the United States	10,281	15,616	50,620
China's exports to other major destination markets.--			
Indonesia	49,566	56,176	124,619
Vietnam	89,159	66,132	84,319
Brazil	20,200	24,751	90,270
Turkey	10,367	43,322	38,729
Philippines	38,018	48,410	44,619
Malaysia	56,788	57,546	39,758
El Salvador	7,610	14,959	19,218
India	235	11,964	16,208
All other destination markets	181,194	187,276	195,262
Total China exports	463,419	526,152	703,623
	Unit value (*dollars per short ton*)		
China's exports to the United States	205	162	160
China's exports to other major destination markets.--			
Indonesia	131	103	109
Vietnam	126	100	105
Brazil	191	132	139
Turkey	102	102	96
Philippines	133	111	113
Malaysia	142	106	109
El Salvador	137	107	114
India	127	108	110
All other destination markets	160	130	136
Total China exports	144	115	121

Table continued on next page.

Table VII-5—Continued
Ammonium sulfate: Chinese exports by destination market, 2013-15

Item	Calendar year		
	2013	2014	2015
	Share of quantity (*percent*)		
China's exports to the United States	1.6	2.1	5.4
China's exports to other major destination markets.--			
Indonesia	11.8	11.9	19.5
Vietnam	21.9	14.4	13.8
Brazil	3.3	4.1	11.2
Turkey	3.1	9.3	6.9
Philippines	8.9	9.5	6.8
Malaysia	12.5	11.9	6.3
El Salvador	1.7	3.0	2.9
India	0.1	2.4	2.5
All other destination markets	35.1	31.5	24.7
Total China exports	100.0	100.0	100.0

Source: Official Chinese exports statistics under HS subheading 3102.21 as reported by various national statistical authorities in the GTIS/GTA database, accessed November 22, 2016.

U.S. INVENTORIES OF IMPORTED MERCHANDISE

Table VII-6 presents data on U.S. importers' reported inventories of ammonium sulfate. Inventories of imports from China increased *** percent from 2013 to 2015, while inventories of imports from all other sources decreased by *** percent over the same time period.

Table VII-6
Ammonium sulfate: U.S. importers' end-of-period inventories of imports by source, 2013-15, January-September 2015, and January-September 2016

* * * * * * *

U.S. IMPORTERS' OUTSTANDING ORDERS

The Commission requested importers to indicate whether they imported or arranged for the importation of ammonium sulfate from China after September 30, 2016. These data appear in table VII-7. ***.

Table VII-7
Ammonium sulfate: Arranged imports, October 2016 through September 2017

* * * * * * *

ANTIDUMPING OR COUNTERVAILING DUTY ORDERS IN THIRD-COUNTRY MARKETS

On August 14, 2014, the Mexican government initiated an antidumping investigation targeting imports of ammonium sulfate from China and the United States. Effective October 10, 2015, following its final determination, the Mexican government began applying antidumping duties on imports from the United States ($0.0759 per kg for Honeywell and $0.1619 for all others) and on imports from China ($0.0929 per kg for Wuzhoufeng and $0.1703 per kg for all others). Honeywell has appealed the findings to a NAFTA binational panel.

INFORMATION ON NONSUBJECT COUNTRIES

In assessing whether the domestic industry is materially injured or threatened with material injury "by reason of subject imports," the legislative history states "that the Commission must examine all relevant evidence, including any known factors, other than the dumped or subsidized imports, that may be injuring the domestic industry, and that the Commission must examine those other factors (including non-subject imports) 'to ensure that it is not attributing injury from other sources to the subject imports.'"[13]

Table VII-8 presents official exports statistics under HTS subheading 3102.21 as reported by various national statistical authorities in the GTIS/GTA database.

Ammonium sulfate accounts for a minor share of global fertilizer markets, reportedly representing less than 4 percent of global nitrogen production.[14] However in a few key markets, it serves as a significant source of nitrogen and sulfur. Major consumer nations include the United States, Brazil, Mexico, Indonesia, China, Vietnam, Turkey, Malaysia, Canada, and Germany.[15]

According to GTA data, exports of ammonium sulfate became more concentrated during 2013-15 with each of the eight leading export countries (China, the United States, Japan, Belgium, Belarus, Taiwan, Canada, and the Netherlands) increasing its share of total global exports (table VII-8). China, the largest exporter of ammonium sulfate throughout the period, experienced the largest increase with its share of total global exports rising from 20.3 percent in 2013 to 58.6 percent in 2015 (table VII-8).

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[13] *Mittal Steel Point Lisas Ltd. v. United States*, Slip Op. 2007-1552 at 17 (Fed. Cir. Sept. 18, 2008), quoting from Statement of Administrative Action on Uruguay Round Agreements Act, H.R. Rep. 103-316, Vol. I at 851-52; *see also Bratsk Aluminum Smelter v. United States*, 444 F.3d 1369 (Fed. Cir. 2006).

[14] "Ammonium Sulphate Heads from East to West," *Fertilizer International*, November-December, 2015, p. 20.

[15] "Ammonium Sulphate Heads from East to West," *Fertilizer International*, November-December, 2015, p. 22.

Table VII-8

Ammonium sulfate: Global exports by exporter, 2013-15

Item	Calendar year		
	2013	2014	2015
	Quantity (*short tons*)		
United States	1,283,538	1,388,897	1,072,730
China	3,216,962	4,584,645	5,824,633
All other major exporting countries.--			
Japan	726,013	674,897	619,213
Belgium	458,429	424,518	381,264
Belarus	280,863	157,190	326,370
Taiwan	339,338	270,048	268,702
Canada	277,207	279,031	208,849
Netherlands	187,497	191,390	168,300
South Korea	807,656	404,834	165,069
Madagascar	7,476,801	103,298	155,627
Russia	203,621	168,042	138,272
Thailand	51,255	40,274	73,611
All other exporting countries.	546,277	551,185	539,106
Total global exports	15,855,457	9,238,247	9,941,746
	Value (*1,000 dollars*)		
United States	270,580	257,515	202,032
China	463,419	526,152	703,623
All other major exporting countries.--			
Japan	94,572	65,355	62,318
Belgium	363,742	281,463	240,138
Belarus	34,578	17,596	37,575
Taiwan	44,043	28,876	29,017
Canada	79,130	67,610	40,296
Netherlands	177,644	150,590	130,195
South Korea	118,735	50,864	25,035
Madagascar	13,331	14,433	21,677
Russia	122,087	82,882	78,901
Thailand	9,078	9,443	14,697
All other exporting countries.	315,202	276,533	251,943
Total global exports	2,106,139	1,829,313	1,837,444

Table continued on next page.

Table VII-8--Continued
Ammonium sulfate: Global exports, by exporting country, 2013-15

Item	Calendar year		
	2013	2014	2015
	Unit value (*dollars per short ton*)		
United States	211	185	188
China	144	115	121
All other major exporting countries.-- Japan	130	97	101
Belgium	793	663	630
Belarus	123	112	115
Taiwan	130	107	108
Canada	285	242	193
Netherlands	947	787	774
South Korea	147	126	152
Madagascar	2	140	139
Russia	600	493	571
Thailand	177	234	200
All other exporting countries.	577	502	467
Total global exports	133	198	185
	Share of quantity (*percent*)		
United States	8.1	15.0	10.8
China	20.3	49.6	58.6
All other major exporting countries.-- Japan	4.6	7.3	6.2
Belgium	2.9	4.6	3.8
Belarus	1.8	1.7	3.3
Taiwan	2.1	2.9	2.7
Canada	1.7	3.0	2.1
Netherlands	1.2	2.1	1.7
South Korea	5.1	4.4	1.7
Madagascar	47.2	1.1	1.6
Russia	1.3	1.8	1.4
Thailand	0.3	0.4	0.7
All other exporting countries.	3.4	6.0	5.4
Total global exports	100.0	100.0	100.0

Source: Official exports statistics under HS subheading 3102.21 as reported by various national statistical authorities in the GTIS/GTA database, accessed November 22, 2016.

APPENDIX A

FEDERAL REGISTER NOTICES

The Commission makes available notices relevant to its investigations and reviews on its website, www.usitc.gov. In addition, the following tabulation presents, in chronological order, *Federal Register* notices issued by the Commission and Commerce during the current proceeding.

Citation	Title	Link
81 FR 35055, June 1, 2016	*Ammonium Sulfate From China; Institution of Antidumping and Countervailing Duty; Investigations and Scheduling of Preliminary Phase Investigations*	https://www.gpo.gov/fdsys/pkg/FR-2016-06-01/pdf/2016-12815.pdf
81 FR 40661, June 22, 2016	*Ammonium Sulfate From the People's Republic of China: Initiation of Countervailing Duty Investigation*	https://www.gpo.gov/fdsys/pkg/FR-2016-06-22/pdf/2016-14670.pdf
81 FR 40665, June 22, 2016	*Ammonium Sulfate From the People's Republic of China: Initiation of Less-Than-Fair-Value Investigation*	https://www.gpo.gov/fdsys/pkg/FR-2016-06-22/pdf/2016-14668.pdf
81 FR 45533, July 14, 2016	*Ammonium Sulfate From China; Determinations*	https://www.gpo.gov/fdsys/pkg/FR-2016-07-14/html/2016-16669.htm
81 FR 76332, November 2, 2016	*Countervailing Duty Investigation of Ammonium Sulfate From the People's Republic of China: Preliminary Affirmative Determination*	https://www.gpo.gov/fdsys/pkg/FR-2016-11-02/pdf/2016-26469.pdf
81 FR 78631, November 8, 2016	*Ammonium Sulfate From China; Scheduling of the Final Phase of Countervailing Duty and Antidumping Duty Investigations*	https://www.gpo.gov/fdsys/pkg/FR-2016-11-08/pdf/2016-26951.pdf
81 FR 78776, November 9, 2016	*Ammonium Sulfate From the People's Republic of China: Preliminary Determination of Sales at Less Than Fair Value*	https://www.gpo.gov/fdsys/pkg/FR-2016-11-09/pdf/2016-26984.pdf
82 FR 4850, January 17, 2017	*Ammonium Sulfate From the People's Republic of China: Final Affirmative Countervailing Duty Determination*	https://www.gpo.gov/fdsys/pkg/FR-2017-01-17/html/2017-00843.htm
82 FR 8403, January 25, 2017	*Ammonium Sulfate From the People's Republic of China: Final Affirmative Determination of Sales at Less Than Fair Value*	https://www.gpo.gov/fdsys/pkg/FR-2017-01-25/html/2017-01653.htm

APPENDIX B

LIST OF HEARING WITNESSES

CALENDAR OF PUBLIC HEARING

Those listed below appeared as witnesses at the United States International Trade Commission's hearing:

Subject: Ammonium Sulfate from China

Inv. Nos.: 701-TA-562 and 731-TA-1329 (Final)

Date and Time: January 12, 2017 - 9:30 a.m.

Sessions were held in connection with these investigations in the Main Hearing Room (Room 101), 500 E Street, S.W., Washington, DC.

OPENING REMARKS:

Petitioner (**Stephen J. Orava**, King & Spalding LLP)

In Support of the Imposition of
Antidumping and Countervailing Duty Orders:

King & Spalding LLP
Washington, DC
on behalf of

PCI Nitrogen LLC

Elio Mazzella, Sr., President, PCI Nitrogen LLC

Elio Mazzella, Jr., Senior Vice President *and* Secretary, PCI Nitrogen LLC

Hans Quitmeyer, Senior Vice President, General Counsel *and* Corporate Secretary, AdvanSix Inc.

Mike Hamilton, Business Director, Plant Nutrients, AdvanSix Inc.

Roy Houseman, Legislative Representative, United Steelworkers

Bonnie B. Byers, Senior International Trade Consultant, King & Spalding LLP

Stephen J. Orava)
) – OF COUNSEL
Benjamin J. Bay)

CLOSING REMARKS:

Petitioner (**Bonnie B. Byers**, King & Spalding LLP)

-END-

APPENDIX C

SUMMARY DATA

Table C-1
Ammonium sulfate: Summary data concerning the U.S. market, 2013-15, January to September 2015, and January to September 201
(Quantity=short tons; Value=1,000 dollars; Unit values, unit labor costs, and unit expenses=dollars per short ton; Period changes=percent--exceptions noted)

	Reported data					Period changes			
	Calendar year			January to September		Calendar year			Jan-Sept
	2013	2014	2015	2015	2016	2013-15	2013-14	2014-15	2015-16
U.S. consumption quantity:									
Amount	***	***	***	***	***	***	***	***	***
Producers' share (fn1)	***	***	***	***	***	***	***	***	***
Importers' share (fn1):									
China	***	***	***	***	***	***	***	***	***
Canada	***	***	***	***	***	***	***	***	***
All others sources	***	***	***	***	***	***	***	***	***
Nonsubject sources	***	***	***	***	***	***	***	***	***
All import sources	***	***	***	***	***	***	***	***	***
U.S. consumption value:									
Amount	***	***	***	***	***	***	***	***	***
Producers' share (fn1)	***	***	***	***	***	***	***	***	***
Importers' share (fn1):									
China	***	***	***	***	***	***	***	***	***
Canada	***	***	***	***	***	***	***	***	***
All others sources	***	***	***	***	***	***	***	***	***
Nonsubject sources	***	***	***	***	***	***	***	***	***
All import sources	***	***	***	***	***	***	***	***	***
U.S. imports from:									
China:									
Quantity	47,236	229,000	369,570	303,464	152,503	682.4	384.8	61.4	(49.7)
Value	10,277	60,221	68,251	56,187	25,140	564.1	486.0	13.3	(55.3)
Unit value	$218	$263	$185	$185	$165	(15.1)	20.9	(29.8)	(11.0)
Ending inventory quantity	***	***	***	***	***	***	***	***	***
Canada									
Quantity	276,465	277,523	201,897	161,199	152,934	(27.0)	0.4	(27.3)	(5.1)
Value	78,587	66,848	38,251	29,892	32,735	(51.3)	(14.9)	(42.8)	9.5
Unit value	$284	$241	$189	$185	$214	(33.4)	(15.3)	(21.3)	15.4
Ending inventory quantity	***	***	***	***	***	***	***	***	***
All other sources:									
Quantity	6,751	1,905	29,738	28,593	81,648	340.5	(71.8)	1,461.2	185.6
Value	2,252	875	6,924	6,491	14,432	207.5	(61.1)	691.2	122.4
Unit value	$334	$459	$233	$227	$177	(30.2)	37.7	(49.3)	(22.1)
Ending inventory quantity	***	***	***	***	***	***	***	***	***
Nonsubject sources:									
Quantity	283,216	279,428	231,635	189,792	234,582	(18.2)	(1.3)	(17.1)	23.6
Value	80,840	67,723	45,175	36,383	47,166	(44.1)	(16.2)	(33.3)	29.6
Unit value	$285	$242	$195	$192	$201	(31.7)	(15.1)	(19.5)	4.9
Ending inventory quantity	***	***	***	***	***	***	***	***	***
All import sources:									
Quantity	330,452	508,428	601,205	493,256	387,084	81.9	53.9	18.2	(21.5)
Value	91,117	127,944	113,426	92,570	72,306	24.5	40.4	(11.3)	(21.9)
Unit value	$276	$252	$189	$188	$187	(31.6)	(8.7)	(25.0)	(0.5)
Ending inventory quantity	***	***	***	***	***	***	***	***	***
U.S. producers':									
Average capacity quantity	3,880,320	4,023,610	4,026,948	3,024,177	3,025,962	3.8	3.7	0.1	0.1
Production quantity	3,456,177	3,491,117	3,317,859	2,480,347	2,553,295	(4.0)	1.0	(5.0)	2.9
Capacity utilization (fn1)	89.1	86.8	82.4	82.0	84.4	(6.7)	(2.3)	(4.4)	2.4
U.S. shipments:									
Quantity	***	***	***	***	***	***	***	***	***
Value	***	***	***	***	***	***	***	***	***
Unit value	***	***	***	***	***	***	***	***	***
Export shipments:									
Quantity	***	***	***	***	***	***	***	***	***
Value	***	***	***	***	***	***	***	***	***
Unit value	***	***	***	***	***	***	***	***	***
Ending inventory quantity	422,981	242,921	313,336	272,053	409,589	(25.9)	(42.6)	29.0	50.6
Inventories/total shipments (fn1)	12.8	6.7	9.6	8.2	12.5	(3.2)	(6.2)	3.0	4.3
Production workers	633	647	651	654	648	2.8	2.2	0.6	(0.9)
Hours worked (1,000s)	1,443	1,572	1,542	7,093	1,205	6.9	8.9	(1.9)	(83.0)
Wages paid ($1,000)	53,037	57,907	58,850	43,828	46,654	11.0	9.2	1.6	6.4
Hourly wages (dollars)	$36.75	$36.84	$38.16	$6.18	$38.72	3.8	0.2	3.6	526.6
Productivity (short tons per hour)	2.4	2.2	2.2	0.3	2.1	(10.2)	(7.3)	(3.1)	505.9
Unit labor costs	$15.35	$16.59	$17.74	$17.67	$18.27	15.6	8.1	6.9	3.4
Net sales:									
Quantity	3,187,504	3,519,838	3,118,386	2,376,004	2,320,611	(2.2)	10.4	(11.4)	(2.3)
Value	645,746	589,706	546,912	433,218	368,671	(15.3)	(8.7)	(7.3)	(14.9)
Unit value	$203	$168	$175	$182	$159	(13.4)	(17.3)	4.7	(12.9)
Cost of goods sold (COGS)	577,600	610,647	522,546	416,414	330,317	(9.5)	5.7	(14.4)	(20.7)
Gross profit or (loss)	68,146	(20,941)	24,366	16,804	38,354	(64.2)	fn3	fn3	128.2
SG&A expenses	67,421	60,380	183,788	150,769	29,709	172.6	(10.4)	204.4	(80.3)
Operating income or (loss)	725	(81,321)	(159,422)	(133,965)	8,645	fn3	fn3	96.0	fn3
Net income or (loss)	(10,055)	(88,873)	(165,843)	(138,585)	3,718	1,549.4	783.9	86.6	fn3
Capital expenditures	66,473	81,677	51,963	34,567	50,521	(21.8)	22.9	(36.4)	46.2
Unit COGS	$181	$173	$168	$175	$142	(7.5)	(4.3)	(3.4)	(18.8)
Unit SG&A expenses	$21	$17	$59	$63	$13	178.6	(18.9)	243.6	(79.8)
Unit operating income or (loss)	$0	$(23)	$(51)	$(56)	$4	fn3	fn3	121.3	fn3
Unit net income or (loss)	$(3)	$(25)	$(53)	$(58)	$2	1,585.9	700.4	110.6	fn3
COGS/sales (fn1)	89.4	103.6	95.5	96.1	89.6	6.1	14.1	(8.0)	(6.5)
Operating income or (loss)/sales (fn1)	0.1	(13.8)	(29.1)	(30.9)	2.3	(29.3)	(13.9)	(15.4)	33.3
Net income or (loss)/sales (fn1)	(1.6)	(15.1)	(30.3)	(32.0)	1.0	(28.8)	(13.5)	(15.3)	33.0

Notes:

fn1.--Reported data are in percent and period changes are in percentage points.
fn2.--data not collected
fn3.--Undefined.

Source: Compiled from data submitted in response to Commission questionnaires, and official U.S. import statistics

APPENDIX D

NONSUBJECT COUNTRY PRICE DATA

Three importers reported price data for Canada for products 1 and 2. Price data reported by these firms accounted for *** percent of U.S. commercial shipments from all nonsubject sources in 2015. These price items and accompanying data are comparable to those presented in tables V-3 to V-4. Price and quantity data for Canada are shown in tables D-1 to D-2 and in figures D-1 to D-2 (with domestic and subject sources).

In comparing nonsubject country pricing data with U.S. producer pricing data, prices for product imported from Canada were lower than prices for U.S.-produced product in 12 instances and higher in 18 instances. In comparing nonsubject country pricing data with subject country pricing data, prices for product imported from Canada were lower than prices for product imported from China in 12 instances and higher in 14 instances. A summary of price differentials is presented in table D-3.

Table D-1

Ammonium sulfate: Weighted-average f.o.b. prices and quantities of imported product 1,[1] by quarters, January 2013-September 2016

Period	United States		Canada	
	Price (dollars per short ton)	Quantity (short tons)	Price (dollars per short ton)	Quantity (short tons)
2013:				
Jan.-Mar.	340	255,913	***	***
Apr.-Jun.	314	286,055	***	***
Jul.-Sep.	249	350,638	***	***
Oct.-Dec.	241	240,038	***	***
2014:				
Jan.-Mar.	244	333,501	***	***
Apr.-Jun.	253	397,232	***	***
Jul.-Sep.	233	268,007	***	***
Oct.-Dec.	240	248,721	***	***
2015:				
Jan.-Mar.	255	297,779	***	***
Apr.-Jun.	260	375,941	***	***
Jul.-Sep.	239	271,134	***	***
Oct.-Dec.	233	210,492	***	***
2016:				
Jan.-Mar.	229	259,831	***	***
Apr.-Jun.	238	345,669	***	***
Jul.-Sep.	189	330,459	***	***

[1] Product 1: Ammonium sulfate in granular form (particles with a diameter of 2.0 millimeters or greater) and sold in bulk, sold to distributors.

Source: Compiled from data submitted in response to Commission questionnaires.

Table D-2

Ammonium sulfate: Weighted-average f.o.b. prices and quantities of imported product 2,[1] by quarters, January 2013-September 2016

Period	United States		Canada	
	Price (dollars per short ton)	Quantity (short tons)	Price (dollars per short ton)	Quantity (short tons)
2013:				
Jan.-Mar.	360	45,598	***	***
Apr.-Jun.	356	60,808	***	***
Jul.-Sep.	***	***	***	***
Oct.-Dec.	239	50,628	***	***
2014:				
Jan.-Mar.	223	68,244	***	***
Apr.-Jun.	248	99,411	***	***
Jul.-Sep.	253	45,135	***	***
Oct.-Dec.	258	55,139	***	***
2015:				
Jan.-Mar.	289	93,289	***	***
Apr.-Jun.	289	99,163	***	***
Jul.-Sep.	***	***	***	***
Oct.-Dec.	***	***	***	***
2016:				
Jan.-Mar.	223	98,539	***	***
Apr.-Jun.	235	118,399	***	***
Jul.-Sep.	***	***	***	***

[1] Product 2: Ammonium sulfate in granular form (particles with a diameter of 2.0 millimeters or greater) and sold in bulk, sold to retailers.

Source: Compiled from data submitted in response to Commission questionnaires.

Figure D-1

Ammonium sulfate: Weighted-average f.o.b. prices and quantities of domestic and imported product 1, by quarters, January 2013-September 2016

* * * * * * *

Figure D-2

Ammonium sulfate: Weighted-average f.o.b. prices and quantities of domestic and imported product 2, by quarters, January 2013-September 2016

* * * * * * *

Table D-3

Ammonium sulfate: Instances of underselling/overselling and the range and average of margins, by country, January 2013-September 2016

Comparison	Total number of comparisons	Nonsubject lower than the comparison source		Nonsubject higher than the comparison source	
		Number of quarters	Quantity (short tons)	Number of quarters	Quantity (short tons)
Nonsubject vs United States.--					
Canada vs. United States	30	12	***	18	***
Nonsubject vs Subject.--					
Canada vs. China	26	12	***	14	***

Note.—In United States vs. nonsubject country comparisons, U.S. prices serve as the benchmark for comparison (e.g., how much under or over are nonsubject prices compared to U.S. prices) while subject country prices serve as the benchmark for subject country vs. nonsubject country comparisons (e.g., how much under or over are nonsubject prices compared to subject country prices).

Source: Compiled from data submitted in response to Commission questionnaires.